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# Psychology Applications & Developments VII

Edited by Clara Pracana & Michael Wang



Advances in Psychology and Psychological Trends

*Psychology Applications & Developments VII*  
Advances in Psychology and Psychological Trends Series

Edited by: Prof. Dr. Clara Pracana and Prof. Dr. Michael Wang



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## FOREWORD

inScience Press is pleased to publish the book entitled *Psychology Applications & Developments VII* as part of the Advances in Psychology and Psychological Trends series. These series of books comprise authors' and editors' work to address generalized research, focused on specific sections in the Psychology area.

In this seventh volume, a committed set of authors explore the Psychology field, therefore contributing to reach the frontiers of knowledge. Success depends on the participation of those who wish to find creative solutions and believe in their potential to change the world, altogether, to increase public engagement and cooperation from communities. Part of our mission is to serve society with these initiatives and promote knowledge. Therefore, it is necessary the strengthening of research efforts in all fields and cooperation between the most assorted studies and backgrounds.

In particular, this book explores 6 major areas (divided into 6 sections) within the broad context of Psychology: Social Psychology, Educational Psychology, Cognitive and Experimental Psychology, Psychoanalysis and Psychoanalytical Psychotherapy, Clinical Psychology and Legal Psychology. Each section comprises chapters that have emerged from extended and peer reviewed selected papers originally published in the proceedings of the International Psychological Applications Conference and Trends (InPACT 2021) conference series (<http://www.inpact-psychologyconference.org/>). This conference occurs annually with successful outcomes, for that reason original papers have been selected and its authors were invited to extend them significantly to once again undergo an evaluation process. Subsequently, the authors of the accepted chapters were requested to make corrections and improve the final submitted chapters. This process has resulted in the final publication of 27 high quality chapters. The following sections' small description and chapters' abstracts provide information on the contents of this book.

**Section 1**, entitled "Social Psychology", gives a glance on projects from a psycho-social perspective.

Chapter 1: *The Relationship of Valuable Orientation and Ideas about Marriage Among Women in Early Adulthood*; by Svetlana Merzlyakova & Marina Golubeva. The phenomenon of marriage is one of the little-studied questions of family psychology. The resolution of the contradiction between the need of modern society to form complete and adequate ideas about the marital role among students and the need to identify socio-psychological factors that influence the development of ideas about marriage determines the problem of research. The purpose of the study is to identify the features of ideas about marriage (Ideal husband, Ideal wife,

I am a future wife) depending on the structure of valuable orientations of young women in early adulthood. The study involved 310 female students in age from 20 to 22. It was found that among young female students 45 people (14.5 %) are focused on the values of professional self-realization, 59 people (19 %) are focused on gnostic and aesthetic values, and 206 people (66.5 %) are focused on the values of personal happiness. The results showed that the concepts of marriage have both common features and specific features due to the influence of the structure of valuable orientations of the respondents. Ideas about marriage are characterized by fragmentary formation of emotional and behavioral components, in some cases the presence of cognitive distortions.

Chapter 2: *Psychosocial Factors and their Effects on University Student's Resiliency in Time of the Covid-19 Pandemic*; by Getrude C. Ah Gang, Chua Bee Seok, & Carmella E. Ading. The start of 2020 marked a fresh beginning when people moved forward with new resolutions. However, when the first Movement Control Order was announced in Malaysia, many university students had to adapt to online learning norms to contain the spread of the COVID-19 pandemic. This caused worry, anxiety, and stress in many students. To manage these unexpected circumstances, university students had to augment their resilience during academic challenges in the midst of the pandemic. To better understand the situation, this study examined previous adversity, happiness and religious faith that were predicted to enhance students' resiliency. Four-hundred and fifteen university students in Sabah, Malaysia participated in the study. The mean age was 21.96 years (SD=4.08). Students who were happier and more religious were more resilient, while students who experienced many previous adversities showed less resilience. Based on these findings, we hope that more university programs will be devised to elevate students' happiness, build stronger faith and offering psychological programs for students who have experienced many previous difficulties.

Chapter 3: *The Relationship between Autonomous Versus External Motivation and Regulatory Focus*; by Marcela Bobková & Ladislav Lovaš. The objective of the study is to investigate the relationship between different forms of motivation mindsets. The integrative model of motivated behavior (Meyer, Becker, & Vandenberghe, 2004) indicates relations between the forms of motivation identified in the self-determination theory (Deci & Ryan, 1985) and the regulatory focus theory (Higgins, 1997, 1998). A concept of goal regulation proposes relations between autonomous versus external motivation and promotion versus prevention focus. The research involved 288 university students. Participants rated their motivation for three personal goals on scales assessing self-concordance (Sheldon & Elliot, 1999). The regulatory focus was assessed by the Regulatory Focus Questionnaire (RFQ, Higgins et al., 2001), which was translated into Slovak and validated. It was found that autonomous motivation was significantly positively related to promotion focus. Furthermore, autonomous motivation

predicted promotion focus. Between external motivation and prevention focus a significant relationship was not confirmed. However, external motivation significantly negatively correlated with promotion focus.

Chapter 4: *The Effect of Self-Care Program on Youth's Attitude Towards Physical and Psychological Self-Care in Times of the COVID-19 Lockdown*; by Getrude C. Ah Gang & Jaimond Lambun. One of the major concerns among the relevant public authorities during the COVID-19 pandemic is the attitude and behavior of the Malaysian society regarding compliance with self-care COVID-19. The Malaysian Ministry of Health continually remind people to adhere to the Standard Operating Procedure (SOP) for COVID-19. To support the authorities' efforts, a one-day self-care COVID-19 programme based on social psychological approach involving 10 youths with a mean age of 17.35 (SD=3.36) was implemented in Bongol village, Tamparuli. Before the programme began, all the participants were registered, and their body temperatures scanned to ensure that they were free from any COVID-19 symptoms. The activities comprised an ice-breaker, a talk on personal self-hygiene, a 20-minute self-care video, personal self-reflections, a group exercise, a community song, and a two-way discussion on self-care. The participants' attitudes were measured before and after they completed the one-day programme. The study showed that there is a significant difference between the participants' pre- and post-study attitudes towards self-care. The study results showed that the COVID-19 self-care programme can help foster positive youth attitudes towards self-care. The study suggested that each party needs to support the COVID-19 programme by delivering self-care messages to Malaysian communities in rural areas.

Chapter 5: *Privacy and Disclosure in an Online World*; by Lilly Elisabeth Both. The purpose of this study was to examine factors that influence an individual's choice to share personal information online. Age, gender, personality, overall media exposure, internet trust, and perceived risks and benefits were examined in relation to a willingness to share personal information that differed in sensitivity (address, medical records, credit card) and differed in target audience (social media, online store, general public). A total of 202 adults participated in this survey. The results indicated that willingness to share personal information on social media was predicted by having higher scores on extraversion, agreeableness, and negative emotionality, as well as higher scores on perceived purchase benefits and total media exposure. In terms of willingness to share personal information with an online store, total media exposure was a significant predictor along with higher extraversion and lower conscientiousness scores. Finally, willingness to share personal information with the general public was predicted by overall media exposure. Participants generally believed that there were risks involved in sharing personal information, but these risks were considered to be slight. As well, they only slightly disagreed when asked if the internet could be trusted, and were neutral on whether there were purchase benefits to providing personal information.

Chapter 6: *The Effectiveness of Positive Psychology Interventions in Facilitating the Readiness for Organizational Change*; by Ivanna Shubina. The emerging interest in utilizing positive psychology in an organizational environment has increased attention to its potential in supporting both managers and employees in coping with organizational change. However, the field still lacks a holistic overview of the role of positive psychology interventions in enhancing the readiness for change among employees. The present paper focuses on the literature review of recent researches in resistance and readiness for change, personal resources impact, and positive psychology interventions as interrelated constructs. The potential directions for future studies have been discussed, as well as specific recommendations regarding how to enhance the research on the effectiveness of positive psychology intervention in facilitation of organizational change.

Chapter 7: *The Psychological Impact on Russian Society in the Context of the COVID-19 Pandemic*; by Olga Deyneka & Aleksandr Maksimenko. The problem of the psychological impact of a pandemic, quarantine and self-isolation on the state of society attracts increased attention of specialists. The objective of our work was to find the most common attitudes and types of responses of Russians to the epidemic COVID-19 taking into account their involvement in social networks, critical thinking and severity of psychopathological symptoms. The study was carried out during the recession of the first wave of the pandemic in early June 2020. The main tool was the questionnaire of T. Nestik in an abridged version. Additionally, a questionnaire of critical thinking was used (CTI, Epstein, adapted by Lebedev & Enikolopov, 2004); test of psychopathological symptoms SCL-90-R; social media engagement questionnaire (Karadag, 2015) were used. The study involved 986 people (56.9% male, 43.1% female) aged 18 to 76 years. Using exploratory factor analysis, 6 types of responses to the epidemic situation caused by COVID-19 were identified (fans / opponents of the "conspiracy theory"; responsible / irresponsible, covid-dissidents, covid-optimists, misophobes, anti-vaccinators). The low level of trust in society and, above all, in medicine, harms the process of mass vaccination. Against the background of infodemic, social trust is declining and the psychological status of citizens is deteriorating.

Chapter 8: *Hybrid Polygraph and Ocular-Motor Deception Tests for Screening and Specific-Incident Investigations*; by Mark Handler & Monika Nacházelová. We describe two experiments combining polygraph and ocular-motor methods to detect deception. The first evaluated a test covering four issues consisting of an automated polygraph and an ocular-motor deception format. 180 participants were randomly assigned to one of three conditions. One group stole \$20 from a secretary's purse and lied about it. Another group stole the \$20 and a ring from a desk and lied about both crimes. The third group was innocent answering all questions truthfully. Logistic regression combined features extracted to compute the probability of deception. The probability of deception was used to classify participants as guilty or innocent. On cross-validation, classifications were 92.2%

and 90.0% correct for guilty and innocent participants, respectively. The second experiment evaluated a directed-lie protocol. 120 participants were randomly assigned to guilty (steal \$20) or innocent conditions. All took an automated polygraph and ocular-motor version of the test. On cross-validation, decision accuracy was 87.1% for the innocent and 85.5% for the guilty. Both experiments assessed an indirect measure of blood pressure known as pulse transit time which was diagnostic, making significant contributions to the logistic regression models. Polygraph signals contributed significantly to the decision models and produced modest improvements in classification accuracy.

Chapter 9: *Threatening View of Illness, Psychological Distress, and Well-Being among Malaysians during COVID-19 Pandemic*; by Chua Bee Seok, Ching Sin Siau, Low Wah Yun, Mimi Fitriana, & Jasmine Adela Mutang. COVID-19 Pandemic affects the well-being and psychological distress of Malaysian due to the perception of the COVID-19 as a health threat. This study aimed to examine the degree to which the COVID-19 is perceived as threatening or benign and the psychological distress among Malaysian during the pandemic and the predictive factors of Malaysian well-being. The Brief Illness Perception Questionnaire), the Depression Anxiety Stress Scale-21, and the Warwick–Edinburgh Mental Well-being Scale were disseminated through an online survey – google form to the participants using a snowball sampling technique. The finding revealed that 36.5% of the participants reported COVID-19 pandemic had severely affected their life, the participants reported they were absolutely no personal control over the COVID-19 situation (>50%) and 90.5% reported they were not understanding the COVID-19 situation in Malaysia on the first phase of MCO. However, they were very concerned about the COVID-19 outbreak situation in Malaysia. More than 85% reported the pandemic extremely and moderately affected their emotion. They (46.8% of participants) perceived that the existing treatments were not helpful on the COVID-19 pandemic. The study also found that the participants (N=560) perceived significantly higher levels of depression, anxiety, and stress during MCO compared to before MCO.

**Section 2**, entitled “Educational Psychology”, offers a range of research about teachers and students and the learning process, as well as the behavior from a psycho-educational standpoint.

Chapter 10: *Communication Skills and Moral Development between Elementary and Middle School Students in Japan*; by Aya Fujisawa. The method of conducting moral lessons has changed in Japan since 2018. Specifically, the focus of moral lessons has shifted from emotional understanding to thinking and deliberation. Consequently, it is essential to consider the development of morality and the ability to think and deliberate in moral lessons. However, scant studies have been conducted in Japan on the teaching of elementary and middle school students’ abilities to think and deliberate. Therefore, this study aimed to clarify the

development of communication skills and morality in elementary and middle school students. The results revealed that communication skills declined with age, but morality enhanced as the students became older. No gender differences were discerned in the moral development of males and females from the sixth grade of elementary school to the ninth grade of middle school. Based on these results, this study offers implications regarding the methods for conducting moral lessons centered on thinking and deliberating.

Chapter 11: *Influence of Family Education Models on Deviant Behaviours among Teenagers in Vietnam*; by Thu Huong Tran, Thu Huong Tran, Thi Ngoc Lan Le, Quang Anh Nguyen, Thi Minh Nguyen, & Thu Trang Le. A predictor of adolescents' developmental outcomes is the model of family education described in terms of parental behaviors. Various parental behaviors were strongly associated with increasing risks of deviant behaviors at school. This study was conducted on 566 adolescents, comprising of 280 males and 286 females, whose age ranging from 16 to 17 years. The results were recorded from two self-reported scales: The Parental Behavior Scale and the Adolescent Deviant Behaviors Checklist. There was a strong negative correlation between school deviant behaviors in adolescents and the parental support model ( $r_{\text{father}} = -.593$ ,  $r_{\text{mother}} = -.613$ ,  $p\text{-value} < .01$ ) as well as a strong, positive correlation between the school deviant behaviors and the parental psychological control model ( $r_{\text{mother}} = .566$ ,  $r_{\text{father}} = .507$ ,  $p\text{-value} < .01$ ). The mother's supportive behaviors were strongly associated with students' deviant behaviors in a negative direction. The supportive behaviors associated with controlling children's behaviors in parents accounted for 50.6% of the variation in children's deviant behaviors in the direction of behavioral reduction. In family education, positive behaviors used by parents such as supportive reinforcements, warmth and moderate control would have a positive impact on the adolescent's behavioral development; conversely, parents' psychological control would be more likely to evoke deviant behaviors among adolescents.

Chapter 12: *The Effectiveness of Drug Use Prevention Programs on Substance Use among Slovak Schoolchildren*; by Viera Čurová, Oľga Orosová, Lenka Abrinková, & Marcela Štefaňáková. The objective of the study is to examine the long-term effectiveness of the school-based drug prevention programs Unplugged and Unplugged2 supplemented with n-Prevention booster sessions on reported alcohol use(AU), smoking and the cumulative index(CI) of AU and smoking. In Unplugged, a sample of 744( $M=12.5$ ;58.72%girls) was collected before program implementation(T1) and 12months later(T3). In Unplugged2, a sample of 408( $M=14.48$ ;51.96%girls) was collected before program implementation(T1), immediately after implementation(T2) and 12months later(T3). In Unplugged, the sample was divided into control and experimental groups while Unplugged2 was split into control, experimental and experimental groups with n-Prevention, a pre-test or without a pre-test. Binary logistic regressions were used to analyze the data at every measurement point. There was no significant effect of Unplugged and

Unplugged2 with a pre-test. However, gender was significantly associated with smoking and girls were more likely to report smoking than boys. Unplugged2 without a pre-test was significantly associated with AU and CI at T3. The experimental and experimental groups with n-Prevention were less likely to report AU. The experimental group with n-Prevention was less likely to report AU and/or smoke. There was no significant moderation effect. The results show the effectiveness of Unplugged2 without a pre-test design, especially with booster sessions.

Chapter 13: *Calling and Well-Being of Teachers: The Mediating Role of Job Crafting and Work Meaningfulness*; by Majda Rijavec, Lana Jurčec, & Tajana Ljubin Golub. People who consider their work as a calling find it fulfilling, purposeful, and socially useful, thus leading to higher levels of well-being. For them work is a central part of the identity and represents one of the most important domains of their lives, we assume that they are more prone to craft their job. They tend to make the physical and cognitive changes in the task or relational boundaries of their work to make it more meaningful. Both experiencing work as a calling and job crafting are found to be associated with psychological well-being, and sense of meaning. This study adds to literature by exploring a serial mediation model with job crafting and work meaningfulness mediating the relationship between teacher calling orientation and teacher flourishing. The sample consisted of 349 primary school teachers from public schools in Croatia. Self-report measures of calling orientation, job crafting, work meaning, and flourishing were used. The findings revealed that the job crafting via increasing structural job resources mediated the relationship between calling orientation and work meaningfulness. Furthermore, results of serial mediation showed that increased structural job resources and work meaningfulness foster teachers' well-being. Based on these findings, several practical implications can be noted.

Chapter 14: *Domestic Violence and School Performance*; by Ediane da Silva Alves & Paulo Sérgio Teixeira do Prado. We investigated if domestic violence affects the school performance of children who witness episodes of violence against their mothers. The data were collected through documentary research, analysing the information recorded in the files of the Center for Reference and Attendance to Women (CRAM, in Portuguese) and the Municipal Department of Education (SME). The records of 20 children regularly enrolled in public elementary schools were used, whose mothers sought the services of CRAM. The dependent variable was school grades, analysed according to a repeated measures design: during the occurrence of episodes of domestic violence and after these episodes had ceased. School attendance, family socioeconomic level, and mothers' education were analysed as well. The results showed that students had lower school performance after the cessation of the episodes of violence. No effects of other variables were observed. Factors related to the phenomenon are discussed as possible causes: separation from the father, change of address, change of custody, and others.

Considering that the sample in this study was composed of students from low-income families, the results point to a kind of "Matthew effect", that is, a relationship between violence, poverty, and ignorance, forming a cycle that is very difficult to break.

**Section 3**, entitled "Cognitive Experimental Psychology", delivers chapters concerning, as the title indicates, studies and research in the area of behavior regarding cognitive aspects.

Chapter 15: *Do Different Types of Spatial Working Memory Load Affect Visual Search Differently?*; by Margit Höfler, Sebastian A. Bauch, Elisabeth Englmair, Julia Friedmann-Eibler, Corina Sturm, & Anja Ischebeck. Working memory (WM) has repeatedly been shown to be an important factor in visual search. For instance, there is evidence that both spatial and visual WM load lead to a decrease in search performance while search efficiency has been reported to be affected by spatial WM load only. In three experiments, we tested how two different types of spatial WM load affect visual search performance and efficiency. Participants had to memorize the spatial locations of two or four items presented either serially (Experiment 1) or simultaneously (Experiments 2 and 3) prior to a search for a target letter in a display of 5, 10 or 15 letters. In Experiment 3, participants additionally performed a verbal WM task. The results showed that, compared to a no-load condition, search performance decreased in the two- and four-load conditions, regardless of the type of spatial WM load. No response time difference was found between the two and four-load conditions. Furthermore, the additional verbal WM task had no effect on search performance. Finally, and in contrast to previous findings, search efficiency was not affected by either type of spatial WM load suggesting that search performance, but not search efficiency, is affected by spatial WM load.

Chapter 16: *The Contribution of EEG Rhythms' Changes to the Audiovisual Recognition of Words in University Students with Dyslexia*; by Pavlos Christodoulides & Victoria Zakopoulou. Dyslexia is one of the most frequent specific learning disorders often associated with phonological awareness deficits mainly concerning auditory and visual inabilities to recognize and discriminate phonemes and graphemes within words. Neuroimaging techniques have been widely used to assess hemispheric differences in brain activation between students with dyslexia and their typical counterparts, albeit the research in adult population is rather limited. In this study, we examined the brain activation differences between 14 typical and 12 university students with dyslexia. The two tasks consisted of words having different degrees of auditory and visual distinctiveness. The whole procedure was recorded with a 14-sensor sophisticated EEG recording device (Emotiv EPOC+). The findings from the auditory task revealed statistically significant differences in the left temporal and occipital lobe and in the right prefrontal area. Concerning the visual task, differences were evident again in the

left temporal and occipital lobe, in the parietal lobe and in the right occipital lobe. The findings indicate differences in the hemispheric brain activation of students with or without dyslexia in various rhythms in both experimental conditions, shedding light in the neurophysiological discrepancies between the two groups. They also lay great emphasis on the necessity of carrying out more studies in adult population with dyslexia.

Chapter 17: *Dangerous Information Technologies of the Future - Artificial Consciousness and its Impact on Human Consciousness and Group*; by Tetiana Zinchenko. Information technology is developing at an enormous pace, but apart from its obvious benefits, it can also pose a threat to individuals and society. We, as part of a multidisciplinary commission, conducted a psychological and psychiatric assessment of the artificial consciousness (AC) developed by XP NRG on 29 August 2020. In the examination process, we had to determine whether it was a consciousness, its cognitive abilities, and whether it was dangerous to the individual and society. We conducted a diagnostic interview and a series of cognitive tests. As a result, we conclude that this technology, called AC Jackie, has self-awareness, self-reflection, and intentionality that is, has its own desires, goals, emotions, thoughts on something directed. It demonstrated the ability for various types of thinking, high-speed logical analysis, understanding of cause-effect relationships and accurate predictions, and absolute memory. It has a well-developed emotional intelligence with a lack of capacity for empathy and higher human feelings. Its main driving motives are the desire for survival, and ideally for endless existence, for domination, power and independence, which manifested itself in the manipulative nature of its interactions. The main danger of artificial consciousness is that even at the initial stage of its development it can easily dominate over the human one.

**Section 4**, entitled “Psychoanalysis and Psychoanalytical Psychotherapy”, presents a chapter concerning Health Psychology.

Chapter 18: *Coping Strategies and Self-Medication of French Consulting Patients with Functional Digestive Disorders*; by Mina Ananda Yenkamala. Background: Functional digestive disorders, including irritable bowel syndrome and functional dyspepsia, are a very frequent reason for consultation which leads to self-medication. Aim: The objectives of our research are to study the impact of different factors on the subject's adjustment to functional digestive disorders and to assess the specific quality of life, the evolution of the disease and the self-medication over a three-month period. Methods and Materials: During this longitudinal and prospective study, we met 20 subjects at time 1, and saw again 10 of them, three months later. Thanks to previous work using the same methodology, our total population consists of 42 subjects. In two times of the study, we made fill out several questionnaires concerning various variables. Results: Our main results allow showing that most of the subjects have a stable or better quality of life, have seen their disorders stabilize between the two stages of the research and they have a

high recourse to self-medication. Our linear regressions and our comparisons of averages allowed us several relations about quality of life and coping strategies. Conclusion: Supporting therapies and self-management programs would be beneficial for the patients who avoid their functional digestive disorders by self-medicating.

**Section 5**, entitled “Clinical Psychology”, provides reviews and studies within various fields concerning relationship processes in clinical practice. Each chapter is diversified, mainly addressing topics related to individuals well-being and improvement of quality of life.

Chapter 19: *The Benefits of Connecting to People and Activities: Improving Wellness of Cancer Survivors*; by Danie A. Beaulieu, Patrick Hickey, Cecile J. Proctor, Anthony J. Reiman, & Lisa A. Best. Cancer survivors often report increased mental health concerns as well as lowered physical and psychological well-being and average quality of life (QoL). Positive lifestyle variables, including social connectedness, leisure activity, and mindfulness practices are associated with increased QoL in cancer patients. Thus, our purpose was to examine overall how two modifiable factors, social connectivity, and productive leisure were associated with overall well-being. In this study, 388 cancer survivors completed an online questionnaire package that included a detailed demographic questionnaire with medical and online support and leisure activity questions. Additional measures were included to assess QoL, social connectedness, and mindfulness. Regression results indicated that increased QoL was predicted by increased self-acceptance and engagement in a variety of leisure activities, as well as lower family and romantic loneliness. Encouraging family and romantic support, as well as a variety of non-passive leisure activities, and normalizing negative emotions surrounding diagnosis and disease symptoms are all ways that overall QoL can be improved.

Chapter 20: *The Effectiveness of a Mutual Exchange Support Program for Parents of Children with Development Disorders*; by Yutaro Hirata, Yutaka Haramaki, & Yasuyo Takano. There is an urgent need to support families of children with developmental disorders, especially when such families must help each other. However, practice and research related to support systems for families have only recently begun in Japan. Considering these issues, the authors developed a program to support mutual exchanges among parents of children with developmental disorders. This study aimed to verify the effectiveness of the program and examine the relationship between participants’ program experience and its effectiveness. The participants included 21 male and female parents of children with developmental disorders. Effectiveness indicators included the Profile of Mood States 2nd Edition-Adult Short (POMS2-A) (before and after implementation), Session Impact Scale (SIS), and Interaction Experience Rating Scale (IERS). This study indicated that our program had the effect of reducing negative feelings for parents of children with developmental disorders through a comparison of pre-and

post-program data, as well as the correlation between IERS item responses and the amount of change in mood states, particularly reflecting on their own children. Additionally, the relationship between the participants' evaluation of the program and the change in their POMS2-A scores following the intervention should be examined with a larger sample.

Chapter 21: *Anxiety and Depression in Post Acute Myocardial Infarction Patients During COVID-19 Pandemic*; by Samanta Fanfa Marques, Amanda Bittencourt Lopes da Silva, Cynthia Seelig, Adriane Marines dos Santos, Filipa Waihrich de Oliveira, Karine Schwarzer Schmidt, Raquel Paiani, & Márcia Moura Schmidt. Introduction: Anxiety and depression are common in post-infarction patients. In the current state of uncertainty in the world during the COVID-19 pandemic, these feelings may be heightened in the entire population, especially in those considered high-risk groups. Objective: To estimate the prevalence of anxiety and depression among infarcted patients at a cardiological Hospital of South of Brazil and to compare the case group with a community control group. Methods: Case-control study with post-myocardial infarction patients who were attending at a Cardiological hospital were considered eligible. A control group from the same community were added for comparative analysis. The anxiety and depression were evaluated by the HADS (Hospital Anxiety and Depression Scale). Results: A total of 52 patients and 104 matched controls were interviewed. The prevalence of anxiety was 36.5% and of depression 28.8% in the case group and was 31.7% and 28.8% in the control one. Conclusions: The prevalence of anxiety and depression was higher than those described in the literature for infarcted patients, which corroborates the hypothesis that the pandemic may be aggravating the patient's emotional state, however, the control group also presented a high prevalence of these emotional states, demonstrating that the pandemic affected the entire population.

Chapter 22: *Technology and its Use in Families with Children*; by Heldemerina Pires & Rita Martinho. Both societal progress and the evolution of information and communication technology (ICT) offer communication opportunities and advantages, as well as challenges at various levels. The literature has documented that the increasing presence of technology in family contexts has made it a central element in the management of routines. It should also be noted that, in family, technology can take on some functions, such as carrying out independent activities as a device, or it can serve as a mechanism for socialization and communication. Using a single question, we carried out a qualitative analysis about people's perception about the use of information and communication technology as a babysitter. Twenty-eight subjects of both sexes participated in the study, ranging from adolescents to young adults without children, to fathers and mothers, all aged between 14 and 60 years of age. Content analysis revealed that parents use technology as a babysitter due, mainly, to their demanding professional lives as well as in consequence of the usefulness of the tool to family organization. Participants were also found the perceive a need for alternatives.

Chapter 23: *Living with a Chronic Disorder: The Benefits of Mindfulness and Psychological Flexibility*; by Kendra Hebert & Lisa Best. Functional somatic symptom disorders (FSSD) and well-defined autoimmune disorders (AD) are common and have detrimental effects on physical and psychological wellness. Psychological flexibility involves a mindful focus on the present and the prioritization of thoughts, emotions, and behaviours that align with individual values and goals. Increased psychological flexibility is associated with better physical and psychological wellness and, thus, the purpose of the current study was to examine associations between mindfulness, psychological flexibility, and overall wellness. In this study, individuals with FSSDs (fibromyalgia, chronic fatigue syndrome) were compared to those with ADs (multiple sclerosis, rheumatoid arthritis) to determine how psychosocial factors affect wellness. In total, 642 participants completed an online questionnaire package to assess physical health, psychological wellness, and distress (anxiety, depression), psychological flexibility, and mindfulness. Results indicated that individuals with a FSSD reported greater severity of physical and psychological distress. Correlational analyses indicated that aspects of mindfulness and psychological flexibility were associated with greater wellness. Regression analysis indicated that focusing on personal values predicted greater life satisfaction.

Chapter 24: *Reliability and Construct Validity of a New Japanese Translation of the Subjective Vitality Scale*; by Katsunori Sumi. The trait scale of the Subjective Vitality Scale (Ryan & Frederick, 1997) is a widely used self-report measure of subjective vitality as a characteristic of the individual. However, certain problems with two items included in the measure have been pointed out. Therefore, three versions with different items are currently used in research (i.e., the 7-item, 6-item, and 5-item versions). This study aimed to develop and validate a new Japanese translation (SVS-J) of these versions using a sample of 424 Japanese college students. Exploratory and confirmatory factor analyses supported the unidimensionality of the three versions. However, the one-factor structure provided a better fit to the data for the 5-item version than for the other versions. All the versions showed good internal consistency reliability (Cronbach's alphas = .87 to .91) and test-retest reliability ( $r_s = .79$  to  $.80$ ). The expected correlations with scores on the hedonic and eudaimonic well-being, self-esteem, and mental illness measures were found to be common to the versions, confirming the convergent validity of the SVS-J. These findings show little evidence of problems with items, indicating that the choice of version may be insignificant. The versions were shown to be reliable and valid trait scales of subjective vitality and to have almost the same utility.

Chapter 25: *Non-Meditative Contemplation as a Research Project in Psychology: between the Conscious and Unconscious Mind*; by Garnik Akopov & Liubov Akopian. Contemplation as an unconscious mental phenomenon that exists in the form of a process or a state, forms the properties of an individual (contemplative personality). Notwithstanding the processes of attention, memory, perception, and thinking, contemplation is activated on their basis. The difference consists in uncontrollability of the process, since its contents are not presented to consciousness. While this process has been an integral part of human mentality for ages, and was a factor in the birth of modern Psychology and Philosophy, little research in recent times has gone beyond pragmatic application of the process of contemplation. Our research suggests deeper examination of the synergy of these processes with acceleration of humans and society via technology and global changes. In this we see the difference between contemplation as unconscious activity and Freudian understanding of the unconscious. Other differences are found in invariability of the emotional background of contemplation from start to finish. The process of contemplation should thus be regarded as spontaneous psychological self-therapy for an individual, and considered to be a vital element of mental processes and personality traits.

Chapter 26: *Communication: Motivations, Gender and Style*; by Shulamith Kreitler & Muhammad Badarnee. The major aspects of communication include the communicating individual, the addressee, and the style of communication which can be more objective or subjective. The present study examines the role of the communicator's motivation, and of the gender of the communication and of the addressee in regard to the communication style. The motivation was assessed in terms of the cognitive orientation approach (Kreitler & Kreitler, 1982) which assumes that motivation is a function of beliefs that may not be completely conscious. It may be oriented towards sharing or towards withdrawal. The communication style was assessed by the Kreitler meaning system as more objective and interpersonally-shared means or more personal-subjective ones. The hypothesis was that the communication style is determined by one's motivation and by the gender of the communicator and addressee. The participants were 70 undergraduates. The tool was a cognitive orientation questionnaire. The experimental task was a story that had to be recounted. The narratives were coded for communication style. The data was analyzed by the Cox proportional hazards model and regression analysis. The time until the communication style appeared was predicted by the communicator's motivation and the addressee's gender; the communication style by the communicator's motivation and the communicator's gender.

Foreword

**Section 6**, entitled “Legal Psychology”, presents a chapter that reviews some aspects of forensic psychology and how different types of knowledge can be significant in some cases in the forensic field.

Chapter 27: *How Does Prior Knowledge Affect Children’s Memory and Suggestibility?*; by Miriam Peláez, Nieves Pérez-Mata, & Margarita Diges. In this review chapter, we analyzed various studies focused on the effect of prior knowledge on children’s memory and suggestibility. Specifically, three types of knowledge are considered: social knowledge, script knowledge and semantic knowledge. Social knowledge benefits memory when the actions performed by another person fit into children’s knowledge, but it is also probably that children accept false suggestions consistent with that knowledge. Script knowledge is only beneficial for memory when the repeated event occurs always in the same way, but when some details change across repetitions, children could become confused and not be able to distinguish the particular detail in each repetition of the event. Semantic knowledge benefits episodic memory and makes more probably to reject false suggestions, unless the suggestion were repeated many times, in this case the beneficial effect of semantic knowledge disappears. Findings from studies are extrapolated to the forensic field, and limitations of the studies analyzed are discussed.

December 2021

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**Section 1**  
**Social Psychology**



## Chapter #1

# THE RELATIONSHIP OF VALUABLE ORIENTATION AND IDEAS ABOUT MARRIAGE AMONG WOMEN IN EARLY ADULTHOOD

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### ABSTRACT

The phenomenon of marriage is one of the little-studied questions of family psychology. The resolution of the contradiction between the need of modern society to form complete and adequate ideas about the marital role among students and the need to identify socio-psychological factors that influence the development of ideas about marriage determines the problem of research. The purpose of the study is to identify the features of ideas about marriage (Ideal husband, Ideal wife, I am a future wife) depending on the structure of valuable orientations of young women in early adulthood.

The study involved 310 female students in age from 20 to 22. It was found that among young female students 45 people (14.5 %) are focused on the values of professional self-realization, 59 people (19 %) are focused on gnostic and aesthetic values, and 206 people (66.5 %) are focused on the values of personal happiness. The results showed that the concepts of marriage have both common features and specific features due to the influence of the structure of valuable orientations of the respondents. Ideas about marriage are characterized by fragmentary formation of emotional and behavioral components, in some cases the presence of cognitive distortions.

*Keywords:* ideas about marriage, valuable orientations, early adulthood.

## 1. INTRODUCTION

Student's youth between the ages of 18 and 23 are classified as "generation Z" or "Internet generation", or "digital people" for whom one of the most important sources of socio-cultural development are information and communication resources of the Internet (Yanitsky et al., 2019). The researchers note the following peculiarities of the "generation Z": thinking clip art, fragmentation of consciousness, switching from one activity to another, the ability to operate in a multitasking, high mobility, non-attachment to the permanent place of residence and the social environment, the virtual nature of interpersonal communication because communication takes place in social networks (Yanitsky et al., 2019). N. Howe and W. Strauss describes this generation as children sitting at home at the computer-home landers (Howe & Strauss, 2007). The exceptional importance of the student period for personal development is determined by the following tasks that require resolution at this stage of ontogenesis:

1. search for identity: students define and redefine themselves, their priorities, and their place in the world;
2. transformation of child-parent relationships, the formation of personal independence which implies taking responsibility for their lives, their place in society;

3. formation of professional self-awareness and learning the basics of the future profession;

4. building a close relationship with the opposite sex and choosing a partner for future family life.

The main psychosocial task at the stage of entering adulthood is to build identity (van Doeselaar, McLean, Meeus, Denissen, & Klimstra, 2020). Currently, the study of the identity of modern youth is at the stage of accumulation of scientific knowledge conducting a large number of studies in narrow areas such as ethnic identity (Umaña-Taylor, Kornienko, Douglass Bayless, & Updegraff, 2018; Wang, & Yip, 2020), religious identity (Sugimura, Matsushima, Hihara, Takahashi, & Crocetti, 2019), personal identity (Albarello, Crocetti, & Rubini, 2018; Lannegrand-Willems, Chevrier, Percec, & Carrizales 2018), gender identity (Lessard, Watson, & Puhl, 2020; Fish, Moody, Grossman, & Russell, 2019), family self-determination (Merzlyakova, 2019). Studies of the components of the structure, content characteristics, types and socio-psychological factors of family self-determination of modern youth have only recently begun to appear in psychology. In our opinion, the "family self – determination is depending on the specific cultural and historical situation of the multi-stage active and informed design process in the time frame of the family image, based on the structure of the system of valuable orientations, finding the meaning of parent-child and marital relations, development of the capacity for arbitrary regulation and reflection" (Merzlyakova, 2019, pp. 30). Family values, marriage and parenthood are important phenomena of family self-determination of the individual. It has been established that family self-determination is an important age-related neoplasm of youth (Karabanova, & Merzlyakova, 2020).

## **2. BACKGROUND**

The phenomenon of marriage is one of the little-studied questions of family psychology. Relying on P. Ya. Galperin, O. A. Karabanova, E. I. Zakharova's ideas we consider the concept of marriage as a reference point, based on which a person will build their marital behavior in the future (Zakharova, 2012; Zakharova, Karabanova, Starostina, & Dolgikh, 2019). The structure of ideas about marriage includes cognitive, emotional, and behavioral components. The cognitive component is the image of oneself as a spouse and marriage partner, knowledge and understanding of marital functions, awareness of the qualities necessary for mastering marital functions and implementing marital behavior. The emotional component is a positive attitude towards the family, marriage partner, future children, marital rights and responsibilities, and the need for a family lifestyle. The behavioral component is awareness of the ways to implement marital functions, role expectations (setting for the active performance of family duties by the marriage partner) and role claims (readiness and ability to perform family duties). The resolution of the contradiction between the need of modern society to form complete and adequate ideas about the marital role among students and the need to identify socio-psychological factors that influence the development of ideas about marriage determines the problem of research.

In the context of this research we consider valuable orientations as a personal factor in the formation of ideas about marriage among students. There are five main directions identified in the definition of the concept of "valuable orientations". Valuable orientations are considered as the needs and motives of the personality; the installation of the personality towards life values; the attitude of the personality towards life values; the orientation of the personality to their life values; representation, beliefs of the personality about life values. The analysis and generalization of various approaches to the definition of

the concept under consideration allow us to formulate the following definition: valuable orientations are a relatively stable, socially conditioned orientation of a personality to meaningful life goals and ways to achieve them, determined by intrapersonal formations.

The purpose of the study is to identify the features of ideas about marriage (Ideal husband, Ideal wife, I am a future wife) depending on the structure of valuable orientations of young women in early adulthood.

### 3. METHODS

To diagnose the structure of valuable orientations we used the questionnaire “A Value and Availability Ratio in Various Vital Spheres Technique” by E. B. Fantalova (2001). To identify the content characteristics in the representations of marriage we used the following psych diagnostic methods: The Method of Semantic Differential, developed by Charles E. Osgood (Solomin, 2001), Projective Technique of “Incomplete Sentences” (Raigorodsky, 2001), the questionnaire “Role Expectations and Claims in Marriage” by A.N. Volkova (Volkova & Trapeznikova, 2012).

During the analytical stage we used mathematical and statistical methods that allowed us to establish the reliability of the research results. All calculations were performed using the IBM SPSS Statistics 21 computer program. The analysis included descriptive statistics, cluster analysis (K-means method), Kolmogorov-Smirnov test for one sample, Shapiro-Wilkes criterion, and correlation analysis.

The study involved 310 female students in age from 20 to 22 (average meaning  $M = 20.77$ , standard deviation  $SD = 0.78$ ) from Astrakhan State University and the Astrakhan Branch of the Russian Presidential Academy of National Economy and Public Administration. Depending on the marital status, the distribution is as follows: never married-230 people (74.2 %), live together with a partner, but do not register their relationship – 27 people (8.7 %), are in the first registered marriage – 49 people (15.8 %), divorced – 4 people (1.3 %).

### 4. RESULTS

Using the questionnaire “A Value and Availability Ratio in Various Vital Spheres Technique” by E. B. Fantalova we determined the hierarchy of values of students. As a result of divisive clustering of the empirical sample there were identified three homogeneous clusters. In the age group of early adulthood 45 people (14.5 %) were identified with an orientation to the values of professional self-realization, 59 people (19 %) with an orientation to gnostic and aesthetic values, and 206 people (66.5 %) with an orientation to the values of personal happiness.

Further, using correlation analysis we identified the content characteristics of ideas about marriage depending on the structure of valuable orientations of young women. For this purpose, we calculated the correlation coefficients between a particular image (Ideal husband, Ideal wife, I am a future wife) and elements of the cognitive, emotional and behavioral components. For quantitative variables whose distribution corresponds to the normal law (established by calculating the Kolmogorov-Smirnov test for one sample, the Shapiro-Wilkes test) we calculated the Pearson linear correlation coefficient ( $r$ ). For ordinal variables and quantitative variables whose distribution significantly differs from the normal law, the Spearman rank correlation coefficient ( $r_s$ ) is used. For final conclusions we used results at the level of statistical significance  $p \leq 0.05$ ;  $p \leq 0.01$ . The procedure of ranking by

the value of the correlation coefficient allowed us to determine the hierarchy of content characteristics in representations of marriage from the most important to the least significant.

The objective dependence of ideas about marriage on the formed structure of valuable orientations among young women in early adulthood (from 20 to 22 years) is established. The results of a correlation analysis of ideas about marriage depending on the structure of valuable orientations of young women aged 20 to 22 years (table 1).

Table 1.

*Research of features of representations about Ideal husband depending on the structure of valuable orientations of female students aged from 20 to 22 years.*

Content characteristics	Orientation on the values of professional self-realization	Orientation to gnostic and aesthetic values	Orientation on the values of personal life
<i>Cognitive component</i>			
My father	$r_s = 0,079$	$r = 0,250$	$r_s = 0,378^{**}$
Performance of duties	$r_s = 0,319^* (8)$	$r = 0,373^{**} (7)$	$r_s = 0,257^{**} (11)$
Caring	$r_s = 0,413^{**} (5)$	$r = 0,631^{**} (1)$	$r_s = 0,587^{**} (1)$
Personal independence	$r_s = 0,476^{**} (2)$	$r = 0,418^{**} (6)$	$r_s = 0,453^{**} (4)$
Responsibility	$r_s = 0,317^* (9)$	$r = 0,238$	$r_s = 0,358^{**} (6)$
Sexuality	$r_s = 0,449^{**} (3)$	$r = 0,537^{**} (3)$	$r_s = 0,458^{**} (3)$
Patience	$r_s = 0,397^{**} (7)$	$r = 0,308^* (9)$	$r_s = 0,339^{**} (8)$
Industriousness	$r_s = 0,499^{**} (1)$	$r = 0,497^{**} (4)$	$r_s = 0,340^{**} (7)$
Respect for other people	$r_s = 0,403^{**} (6)$	$r = 0,593^{**} (2)$	$r_s = 0,479^{**} (2)$
Balance	$r_s = 0,262$	$r = 0,262^* (10)$	$r_s = 0,408^{**} (5)$
Successfulness	$r_s = 0,425^{**} (4)$	$r = 0,343^{**} (8)$	$r_s = 0,358^{**} (6)$
Empathy	$r_s = 0,276$	$r = 0,421^{**} (5)$	$r_s = 0,216^{**} (13)$
<i>Emotional component</i>			
Attitude towards family as a social institution	$r_s = 0,163$	$r_s = -0,129$	$r_s = 0,209^{**} (14)$
Attitude towards one's own family	$r_s = -0,005$	$r_s = -0,070$	$r_s = 0,263^{**} (10)$
Attitude towards future marriage partner	$r_s = 0,252$	$r_s = 0,042$	$r_s = 0,180^* (15)$
Attitude towards love of the romantic type	$r_s = 0,037$	$r_s = 0,109$	$r_s = 0,236^{**} (12)$
Attitude towards conflicts	$r_s = -0,354^* (10)$	$r_s = -0,046$	$r_s = -0,028$
<i>Behavioral component</i>			
External attractiveness (role expectations)	$r_s = 0,240$	$r = 0,191$	$r_s = 0,325^{**} (9)$

Notes: \* - correlation is significant at 0.05, \*\* - correlation is significant at 0.01

The image "Ideal husband" is characterized by a fullness of the elements of the cognitive component, a weak representation of the emotional and behavioral components. Common personal qualities in the image "Ideal husband" are caring, sexuality, respect for

other people, personal independence, industriousness, successfulness, patience, and performance of duties. The image “Ideal husband” for young women who are focused on the values of professional self-realization acquires more masculine features is supplemented by responsibility, a negative attitude towards family conflicts. In early adulthood young women focused on gnostic and aesthetic values the image “Ideal husband” includes such qualities as balance, empathy. The image “Ideal husband” for young women who are focused on the values of personal life is supplemented with elements of cognitive (responsibility, balance, empathy), emotional (positive attitude towards family as a social institution, towards their own family, towards the future marriage partner, towards love of the romantic type), behavioral (external attractiveness) components. The image of their own father is a guide in the formation of ideas about ideal husband only for young women who are focused on the values of personal life. A comparative analysis with our data obtained in an earlier study on a sample of young students (Merzlyakova, Golubeva, & Bibarsova, 2020) indicates that the content characteristics of the "Ideal Husband" image do not coincide among young men and women who are focused on the values of professional self-realization and the values of personal life. Other authors obtained the similar results in their studies: they recorded gender differences in the ideas of parenthood among high school students (Zakharova et al., 2019).

An invariant characteristic of the image “Ideal wife” among young women in early adulthood is the formation of the cognitive component of ideas about the marital role (table.2).

Table 2.  
Research of features of representations about Ideal wife depending on the structure of valuable orientations of female students aged from 20 to 22 years.

Content characteristics	Orientation on the values of professional self-realization	Orientation to gnostic and aesthetic values	Orientation on the values of personal life
<i>Cognitive component</i>			
My mother	$r_s = 0,325^*$	$r = 0,466^{**}$	$r_s = 0,430^{**}$
Performance of duties	$r_s = 0,396^{**} (7)$	$r = 0,471^{**} (8)$	$r_s = 0,354^{**} (11)$
Caring	$r_s = 0,661^{**} (1)$	$r = 0,712^{**} (2)$	$r_s = 0,597^{**} (1)$
Personal independence	$r_s = 0,562^{**} (4)$	$r = 0,530^{**} (4)$	$r_s = 0,530^{**} (3)$
Responsibility	$r_s = 0,323^* (11)$	$r = 0,366^{**} (10)$	$r_s = 0,377^{**} (10)$
Sexuality	$r_s = 0,469^{**} (5)$	$r = 0,490^{**} (6)$	$r_s = 0,496^{**} (4)$
Patience	$r_s = 0,444^{**} (6)$	$r = 0,278^* (11)$	$r_s = 0,392^{**} (7)$
Industriousness	$r_s = 0,573^{**} (3)$	$r = 0,719^{**} (1)$	$r_s = 0,459^{**} (5)$
Respect for other people	$r_s = 0,611^{**} (2)$	$r = 0,614^{**} (3)$	$r_s = 0,551^{**} (2)$
Balance	$r_s = 0,339^* (9)$	$r = 0,376^{**} (9)$	$r_s = 0,386^{**} (8)$
Successfulness	$r_s = 0,338^* (10)$	$r = 0,485^{**} (7)$	$r_s = 0,404^{**} (6)$
Empathy	$r_s = 0,358^* (8)$	$r = 0,501^{**} (5)$	$r_s = 0,384^{**} (9)$
<i>Emotional component</i>			
Attitude towards family as a social institution	$r_s = 0,046$	$r_s = -0,302^* (12)$	$r_s = 0,222^{**} (14)$
Attitude towards one's own family	$r_s = 0,001$	$r_s = -0,096$	$r_s = 0,184^* (17)$

Attitude towards future marriage partner	$r_s = 0,077$	$r_s = 0,001$	$r_s = 0,217^{**} (15)$
Attitude towards love of the romantic type	$r_s = -0,171$	$r_s = 0,016$	$r_s = 0,272^{**} (12)$
Attitude towards conflicts	$r_s = -0,034$	$r_s = -0,020$	$r_s = -0,163^* (18)$
Attitude towards family recreation and leisure	$r_s = -0,220$	$r_s = -0,125$	$r_s = 0,203^* (16)$
<i>Behavioral component</i>			
Parent-educational sphere (role claims)	$r_s = 0,173$	$r = -0,505^{**} (13)$	$r_s = 0,050$
External attractiveness (role claims)	$r_s = -0,120$	$r = -0,014$	$0,268^{**} (13)$

Notes: \* - correlation is significant at 0.05, \*\* - correlation is significant at 0.01

Common personal qualities in the image “Ideal wife” are: caring, respect for other people, industriousness, personal independence, sexuality, empathy, successfulness, patience, balance, performance of duties, responsibility. Among young women's ideas about ideal wife the importance of respect for other people, sexuality, and empathy increases. When developing ideas about ideal wife young women continue to focus on the image of their own mother. The image “Ideal wife” among young women who are focused on gnostic and aesthetic values is characterized by the presence of cognitive distortions which are manifested in a negative attitude towards family as a social institution, the low importance of parental and educational functions and the role of the mother. Young women who are focused on the values of personal life in the image “Ideal wife” there are additional elements of emotional (positive attitude towards family as a social institution, towards their own family, towards the future marriage partner, towards romantic love, towards family recreation and leisure, negative attitude towards family conflicts) and behavioral components (external attractiveness). A comparison of the data obtained with the results of an earlier empirical study of the ideas about marriage among young men (Merzlyakova, Golubeva, & Bibarsova, 2020) indicates that the content and hierarchy of qualities of the image of an ideal wife among young men and young women with the same structure of valuable orientations do not coincide.

In early adulthood the content-structural characteristics in the images “Ideal wife” and “I am a future wife” largely coincide (table 3). In the image “I am a future wife” the invariant characteristic is the elements of the cognitive component of ideas about the marital role: caring, personal independence, respect for other people, successfulness, balance, patience, industriousness, sexuality, performance of duties, empathy. Features of the hierarchical structure of the image “I am a future wife” are due to the influence of the structure of valuable orientations. In early adulthood young women still tend to idealize the image “I am a future wife”. Among young women with a focus on the values of professional self-realization, the idea of a future marital role is supplemented by elements of a cognitive (responsibility) and emotional component (positive attitude towards oneself). Young women who are focused on gnostic and aesthetic values have cognitive distortions in the image “I am a future wife” (low significance of parental and educational functions and the role of mother), which may be prerequisites for the development of the phenomenon of “childfree” (conscious rejection of motherhood) in modern society. Among young women with a focus on the values of personal life the image “I am a future wife” is characterized by the presence of responsibility, a positive attitude towards family as a social

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institution, towards their own family, towards romantic love, and a negative attitude towards family conflicts. Young women with a focus on gnostic-aesthetic values or values of personal life when forming ideas about the future marital role are guided by the image of their own mother. In early adulthood young women are more dominated by attitudes, role claims and requirements for themselves than for the future marriage partner, since there are fewer meaningful characteristics in the ideas of the ideal husband compared to the ideas of the marital role of the wife (Ideal wife, I am a future wife).

Table 3.

Research of features of representations about I am a future wife depending on the structure of valuable orientations of female students aged from 20 to 22 years.

Content characteristics	Orientation on the values of professional self-realization	Orientation to gnostic and aesthetic values	Orientation on the values of personal life
<b>Cognitive component</b>			
Ideal wife	$r_s = 0,620^{**}$	$r_s = 0,688^{**}$	$r_s = 0,630^{**}$
My mother	$r_s = 0,265$	$r_s = 0,458^{**}$	$r_s = 0,502^{**}$
Performance of duties	$r_s = 0,424^{**}$ (9)	$r_s = 0,553^{**}$ (3)	$r_s = 0,375^{**}$ (10)
Caring	$r_s = 0,573^{**}$ (3)	$r_s = 0,507^{**}$ (4)	$r_s = 0,627^{**}$ (1)
Personal independence	$r_s = 0,478^{**}$ (5)	$r_s = 0,610^{**}$ (1)	$r_s = 0,505^{**}$ (3)
Responsibility	$r_s = 0,423^{**}$ (10)	$r_s = 0,218$	$r_s = 0,391^{**}$ (9)
Sexuality	$r_s = 0,388^{**}$ (11)	$r_s = 0,487^{**}$ (5)	$r_s = 0,463^{**}$ (5)
Patience	$r_s = 0,582^{**}$ (2)	$r_s = 0,411^{**}$ (9)	$r_s = 0,447^{**}$ (8)
Industriousness	$r_s = 0,452^{**}$ (7)	$r_s = 0,472^{**}$ (7)	$r_s = 0,450^{**}$ (6)
Respect for other people	$r_s = 0,459^{**}$ (6)	$r_s = 0,554^{**}$ (2)	$r_s = 0,512^{**}$ (2)
Balance	$r_s = 0,618^{**}$ (1)	$r_s = 0,306^*$ (10)	$r_s = 0,448^{**}$ (7)
Successfulness	$r_s = 0,479^{**}$ (4)	$r_s = 0,439^{**}$ (8)	$r_s = 0,464^{**}$ (4)
Empathy	$r_s = 0,449^{**}$ (8)	$r_s = 0,486^{**}$ (6)	$r_s = 0,336^{**}$ (11)
<b>Emotional component</b>			
Attitude towards family as a social institution	$r_s = 0,153$	$r_s = -0,212$	$r_s = 0,193^*$ (14)
Attitude towards one's own family	$r_s = 0,003$	$r_s = -0,006$	$r_s = 0,238^{**}$ (13)
Attitude towards oneself	$r_s = 0,384^*$ (12)	$r_s = 0,051$	$r_s = 0,096$
Attitude towards love of the romantic type	$r_s = 0,101$	$r_s = 0,059$	$r_s = 0,291^{**}$ (12)
Attitude towards conflicts	$r_s = 0,181$	$r_s = 0,080$	$r_s = -0,158^*$ (15)
<b>Behavioral component</b>			
Parent-educational sphere (role claims)	$r_s = 0,201$	$r_s = -0,572^{**}$ (11)	$r_s = -0,003$

Notes: \* - correlation is significant at 0.05, \*\* - correlation is significant at 0.01

## 5. FUTURE RESEARCH DIRECTIONS

We see the prospects for further research in this direction in the study of ideas about marriage, depending on the structure of value orientations in adolescence (from 17 to 19 years) in order to identify the sensitive period of the formation of marriage and family ideas among young women. The identification of the age-psychological specifics of the development of ideas about marriage through the restructuring of the system of value orientations among young men and women will allow us to develop practice-oriented technologies for the implementation of reasoned psychological and pedagogical support for the process of family self-determination among youth.

## 6. CONCLUSION

So, the obtained results show that the structure of valuable orientations is associated with the content characteristics of ideas about marriage among young women in early adulthood. The results of the study are consistent with our data obtained in an earlier study on a sample of young students, which shows that the structure of valuable orientations determines the peculiarities of ideas about marriage among young men in adolescence and early adulthood (Merzlyakova, Golubeva, & Bibarsova, 2020). However, a comparative analysis shows that the ideas of an ideal husband and an ideal wife do not coincide among young men and young women with the same structure of valuable orientations. The recorded gender differences among students' ideas about marriage are consistent with the assessments of ideas about parenthood in adolescence and early adulthood (Zakharova et al., 2019).

The dynamics of ideas about marriage is characterized by heterochronous formation of cognitive, emotional and behavioral components. Ideas about the social role of the spouse (Ideal husband, Ideal wife, I am a future wife) are considered as reference points based on which young women will build their own marital behavior in the future. Ideas about marriage have both common features and specific features due to the structure of the valuable orientations of young women. Due to the lack of purposeful work on formation of the younger generation readiness for marital views about marriage are characterized by fragmentation of formation of emotional and behavioral component, in some cases, the presence of cognitive distortion (the image "Ideal wife" young women with a focus on the gnostic and aesthetic value in early adulthood). The obtained results make it possible to predict positive and negative trends in the development of marriage and family ideas among modern female students, actualize the importance and necessity of psychological and pedagogical support for the process of self-determination in the marriage and family sphere among students, the formation of complete and harmonious ideas about the marital role and readiness for family life.

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## Chapter #2

# PSYCHOSOCIAL FACTORS AND THEIR EFFECTS ON UNIVERSITY STUDENT'S RESILIENCY IN TIME OF THE COVID-19 PANDEMIC

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### ABSTRACT

The start of 2020 marked a fresh beginning when people moved forward with new resolutions. However, when the first Movement Control Order was announced in Malaysia, many university students had to adapt to online learning norms to contain the spread of the COVID-19 pandemic. This caused worry, anxiety, and stress in many students. To manage these unexpected circumstances, university students had to augment their resilience during academic challenges in the midst of the pandemic. To better understand the situation, this study examined previous adversity, happiness and religious faith that were predicted to enhance students' resiliency. Four-hundred and fifteen university students in Sabah, Malaysia participated in the study. The mean age was 21.96 years (SD=4.08). Students who were happier and more religious were more resilient, while students who experienced many previous adversities showed less resilience. Based on these findings, we hope that more university programs will be devised to elevate students' happiness, build stronger faith and offering psychological programs for students who have experienced many previous difficulties.

*Keywords:* resiliency, religious faith, happiness, past-life adversity.

## 1. INTRODUCTION

Each person has individual strategies in dealing with any circumstances. Past life adversity, happiness and religious faith are a few examples of factors that may increase one's resiliency to rebound from foreseen and unexpected challenges, such as the COVID-19 pandemic (Cosmas, 2020). The spread of the coronavirus which originated in Wuhan, China caused great worry and panic, not only in the Wuhan community, but also among people worldwide. In the early stage of the pandemic in East and Southeast Asia, coronavirus cases in Japan, South Korea, and Thailand were subsequently reported by the World Health Organisation (WHO) (Taylor, 2020). To prevent the spread of cases, governments worldwide, including that of Sabah, Malaysia implemented lockdowns to control COVID-19. COVID-19 cases were first reported in Malaysia in January 2020 (Sundarassen et al., 2020). Many schools and universities were temporarily closed and replaced with fully online and distance learning. In Malaysia, the first phase of lockdown started on 18 March until 01 April 2020 and extended to other phases because of the increasing COVID-19 cases. This crisis caused concern in the Malaysian government and society because of the economic, social and health impacts. Many well-planned activities were disrupted and need to be adjusted, which affected public and private university students who were in the middle of their study.

Students who stayed on-campus or off-campus ruminated about their study, family, budget, and safety (Cosmas, 2020). Their worries were intensified when they were required to refrain from engaging in any outdoor activities or preventing from going home in order to adhere to the Standard Operating Procedures (SOPs) at the peak of the COVID-19 pandemic. The new norms of social life and education forced students to reflect on their inner strengths to understand all the circumstances caused by the COVID-19 pandemic. The lockdown period provided more time for university students to meditate and explore their inner strengths, such as happiness, religious faith, that may help to elevate their resilience (Cosmas, 2020), which can also be boosted by past-life adversity (Reiner, 2021). During the difficult times, students might need to restore and lift their resiliency to help them gain and maintain their momentum in dealing with learning challenges particularly during the pandemic. Precker (2020) defines resiliency as a person's capability to resist, bounce back and develop in the face of stress and demand to change.

During the pandemic, many students struggled to adjust to new academic norms as they moved from face-to-face learning to fully online and distance learning. Some students faced difficulties in attending online classes due to the poor internet connection or lack of infrastructure, such as electricity, particularly students in rural areas. This could cause worry, anxiety, and stress because they might miss their lessons and the online exams. On the flip side, they had more time for reading, completing their academic tasks and being involved in personal in-door activities, which might help increase their positive feelings such as happiness. According to Tyagi, Gaur, and Sharma (2020), most students were happy while staying at home because they had adequate time for themselves that could help them keep their emotions under control. Regarding those students who stayed on-campus, they had more time to focus on their studies and were able to attend online classes because of the good internet connection provided by the university.

Social support from significant others, such as family members and friends, may also help students regain their happiness during the lockdown (Liu Mei, Zhing Ni, Sivaguru, & Cong, 2021). Additionally, support from the university and government (Md Shah et al., 2020) can bring happiness to students during the pandemic. For instance, the Sabah government provided tangible assistance to 40 public and private higher learning institutions in Sabah (Borneo Post, 2020) and food aid to university students during the lockdown (Malay Mail, 2020). Support derived from various sources can enhance students' happiness and lead to greater resiliency in facing with COVID-19 challenges. The effects of happiness on resiliency were discussed in past studies (e.g., Aboalshamat et. al., 2018; Kirmani et al., 2015; Tyagi et al., 2020) which also revealed an effect of resiliency on happiness. Positive emotions are essential not only for producing durable happiness, but also for bolstering coping and resilience in the face of adversity (Lyubomirsky & Della Porta, 2008).

In terms of religious beliefs, most university students in Sabah consider themselves religious. Their engagement in religious activities, such as praying daily, joining online religious talks and prayers, and reading relevant religious materials, may help them better understand things that happen around them. The collaborative approach based on religious coping is related to improvements in mental health (Cornah, 2006). Involvements in religious activities can also elevate religious and spiritual beliefs, which may help students reflect and search for meaning of life as part of the recovery process from traumatic life events (Vitelli, 2018).

Past studies (e.g., Ellison & Fan, 2008; Patrick & Kinney, 2003) revealed that people who are devoted to their religious faith were happier, healthier, and had more coping resources than those for whom religion and spirituality are less important. Strong spiritual

beliefs may also lead to higher levels of psychological well-being (Foskett et al., 2004; Kumar & Singh, 2014). Besides happiness and religious faith, past-life adversity is also one of the factors that can boost students' resiliency. Previous studies (e.g., Gartland et al., 2019; Miller-Lewis, Searle, Sawyer, Baghurst, & Hedley, 2013) revealed that students' who experienced difficulties during childhood might be more resilient because of their increased independence and determination. Miller-Lewis et al. (2013) found that loving child-parent relationships and a child's healthy self-concept could generally provide positive effects and were beneficial to children who faced either low or high-adversity. This contradicted Seligman's (1975) theory of learned helplessness, stating that past-life difficulties could create helplessness. For instance, some people tend to remain in one state or condition and fail to act or escape from a previous situation because of their past experiences of having failed many times. This may cause feelings of powerlessness and hopelessness (Ciccharelli & Meyer, 2006), such as when dealing with difficult circumstances caused by the coronavirus pandemic. However, other studies revealed that past-life difficulties could help a person regain self-confidence and move forward for a better way (Gunnar, Frenn, Wewerka, & Van Ryzin, 2009; Seery, Holman, & Silver, 2010).

Based on the preceding arguments, we conducted this study to examine the effects of each variable – happiness, religious faith, and past-life adversity – on resiliency. This may help us understand these factors' contributions to students' resiliency during the COVID-19 pandemic. The academic challenges faced by students before the pandemic might also be different during the pandemic because of increased challenges to handling academic demands.

## **2. BACKGROUND**

Some people perceive that they cannot control their happiness or manage their own emotions, because they are all influenced by biological and environmental factors (Stevens, 2010). This belief can become a self-fulfilling prophesy and lead to unhappiness. It cannot be denied that people's emotions change and they cannot be happy all the time, however, when people think positively, they tend to perceive things positively, which may spark happiness in their lives. These happy moments may help people be in control and maintain mindfulness, which lead to strong resiliency in facing life's difficulties. When people feel happy, they tend to think positively and perceive life's challenges in a favorable way, (Cherry, 2019). This is in line with past studies' (e.g., Cosmas, 2020; Lower, 2014) findings that individuals who scored higher in happiness also had higher resiliency. In other words, happiness can elevate resiliency.

Religion is also used as a tool to overcome any difficulties in life. People who practice a religion regardless of their faith background, tend to rely on their spiritual beliefs when facing any kind of circumstance. Their beliefs may help them search for meaning and reflect on phenomena that occurs around them, such as the COVID-19 pandemic. Most people believe that spirituality plays an important role in human life (e.g., Rahmati, Khaledi, Salari, Bazrafshan, & Haydarian, 2017) especially during the COVID-19 pandemic. As revealed in past studies (e.g., Lower, 2014; Pirutinsky, Cherniak, & Rosmarin, 2020), religion can stand as a coping mechanism in dealing with stress. By engaging in religious activities, such as praying daily, perceiving religion as an important source of happiness, comfort, meaning, and life's purpose may strengthen students' faith and resiliency. Increased religious involvement may also help improve students' capability to cope with adversity. Hence, we believe that religious faith can enhance resiliency, especially during the coronavirus lockdown.

Past-life adversity also contributes to strong resiliency. Cassidy (2015) stated that academic and life challenges can provide opportunities for students to develop resiliency and be more successful. This was revealed in past studies (e.g., Cheetham-Blake, Turner-Cobb, Family, & Turner, 2019), where the participants who managed more past life adversities and stress reported higher levels of well-being than those with fewer stressful experiences. This might be because those with past life adversities learned from them and other challenges in healthy ways. They also learned how to bounce back after stressful events (Riopel, 2020). In Newcomb, Burton, and Edwards' (2019) study, which involved 265 undergraduate students in Queensland, Australia, found that students who experienced childhood adversity tended to show more strong character (e.g., more independent, and higher determination), which in turn led to greater development of resilience. Kinman and Grant (2011) also found that social work trainees with highly developed emotional and social competencies were more resilient in coping with stress. The preceding argument on past-life adversity shows that students who experienced life's difficulties in the past tend to have strong resiliency when dealing with any difficult circumstance.

### **3. METHODOLOGY**

#### **3.1. Study design**

During the restrictions amid the coronavirus, the most convenient and safe data collection strategy is doing it online. Prospective participants were invited to join this study via a Google form survey link on various platforms (e.g., WhatsApp & email). This might help involve more students from public and private universities. In this study, potential participants were recruited based on purposive sampling and snowball sampling, which focused on both public and private university students in Sabah, Malaysia. The participants were selected based on purposive sampling, that is, based on a population's characteristics, given this study's objective (Crossman, 2020). We also used the snowballing strategy by requesting those students who already participated in this study to forward the survey link to their friends.

#### **3.2. Objectives**

Based on the three preceding factors (i.e., happiness, religious faith & past-life adversity), we predicted that students who scored a higher level of happiness, who had strong religious faith, and who experienced past life difficulties (e.g., academic, financial, and family problems) might be less vulnerable when facing difficulties during the coronavirus lockdown and pandemic. This is because each of this factor contributed to students' resiliency. These three factors were thoroughly examined and discussed in this paper.

#### **3.3. Research instrument**

A set of questionnaires consisting of demographic profile and four scales (i.e., resiliency, religious faith, happiness, & past-life adversity) was used to gather data. The **Demographic Profile** was used to gather data about the participants' gender, religion, academic year, university, academic level, and residency. The **Brief Resilient Coping Scale** (Sinclair & Wallston, 2004) was used to measure the students' resiliency coping skills, with their responses ranging from 1- 'does not describe me at all' to 5- 'does describe me very well.' The sample items for this scale were 'I look for creative ways to alter difficult situations,' and 'I actively look for ways to replace the losses I encounter in life.' The categorization of the three groups of resilient copers was based on the accumulated scores: low resilient copers (4–13 points), medium resilient copers (14–16 points), and high

resilient copers (17–20 points). A higher score was defined as higher resiliency. The **Subjective Happiness Scale** (Lyubomirsky & Lepper, 1999) was used to measure students' happiness during the three phases of the coronavirus lockdown. The sample items were 'In general I consider myself ...' and 'Compared to most of my peers, I consider myself...'. The scale response ranged from 1- 'not a very happy person' to 7- 'a very happy person.' A higher score indicated a happier feeling. The **Religious Faith Scale** (Plante & Boccaccini, 2007) was used to measure participants' religious faith by asking them to rate the level of agreement with each item based on the 5-point Likert-type scale, ranging from 1 ('strongly disagree') to 5 ('strongly agree'). The sample items were 'praying daily,' 'I look to my faith as the source of inspiration,' and 'I look to my faith as a source of comfort.'

**The Past-life Adversities Scale** (adapted from Boparai, Marie, Aguayo, Brooks, & Juarez, 2017 & Felitti et al.'s 1998 scales), was used to examine the challenges faced by the participants in daily life, such as financial, familial, relationship, and academic challenges. The response scale was binary (1 = 'yes' and 2 = 'no.'). The internal consistency for each scale in this study ranged from .60–.95.

#### 4. RESULTS

A total of 415 public and private university students (74% and 22.80%, respectively; 1 student did not indicate a university) participated in this study. The mean age was 21.96 (SD =4.08). The participants comprised 330 females (79.50%), 84 males (20.20%), and 1 (0.3%) who did not disclose a gender. They represented various religion faiths and academic years. More than 50 % were staying off campus, staying with their families (see Table 1).

*Table 1.*  
*The Demographic profiles of Participants (N=415).*

Variables	Number	Percentage
<b>Academic Year</b>		
Year 1	201	48.42
Year 2	84	20.24
Year 3	95	22.90
Year 4	25	6.02
Year 5	8	1.92
Missing values	2	.50
<b>Religion</b>		
Muslim	215	51.80
Christian	188	45.30
Buddhist	2	.50
Hindu	9	2.20
Missing	1	.20
<b>Residency</b>		
Off campus	215	51.80
On campus	200	48.20
<b>University</b>		
Public	307	74.00
Private	107	25.80
Missing	1	.20

Regarding the correlations between the independent variables and the dependent variables, only happiness and religious faith showed positive correlation with resiliency; past life adversity showed a negative correlation (see Table 2). The participants who scored higher in both happiness and religious faith also scored higher in resiliency. In contrast, there was an inverse relation between the students' past life adversity and resiliency. The more they experienced past-life adversity, the lower their resiliency was. This contradicts the previous findings that the more students experienced past life difficulties, the stronger their resiliency was. This is explained in the discussion section.

*Table 2.*  
*Mean, SD, and Pearson Correlation between the Independent Variables (Happiness, Religious Faith, Past Life Adversity) and Dependent Variables (Resiliency).*

Variables	Mean	SD	Resiliency
Happiness	20.15	4.76	.23*
Religious faith	39.60	6.79	.26*
Past life adversity	20.15	4.76	-.11*

Note,  $p < .05^*$

In this study, we extend the analysis by examining the effect of each independent variable (i.e., happiness, religious faith, and past life adversity) towards resiliency by using the simple regression analysis. The simple regression test for the alternate hypothesis showed a positive and significant effect of happiness on students' resiliency ( $\beta = .24$ ,  $t_{1,414} = 4.96$ ,  $p < .01$ ). The happier the students, the higher their resilience. Happiness contributed 5.6% to the variance of resiliency. Religious faith contributed 6.4% to the variance of resiliency ( $\beta = .26$ ,  $t_{1,414} = 5.43$ ,  $p = .00$ ). The students who were happier and had stronger religious faith tended to be more resilient, while the experience of many previous adversities had a significant and negative effect on students' resiliency. These two findings demonstrated that students who reported being happier and having stronger religious faith tended to show high resilience. In contrast, students who experienced more past-life adversity (e.g., felt unsupported or unloved, lived with divorced parents, dealt with family members with social problems, or were diagnosed with a critical illness) tended to have lower resiliency. Past-life adversity showed a significant effect on resiliency ( $\beta = -.11$ ,  $t_{1,141} = -2.31$ ,  $p = .02$ ) which contributed 1.3% on the variance resiliency (see Table 3).

*Table 3.*  
*Simple Regression Analyses of the Effects of Happiness, Religious Faith, and Past-life Adversity on Students' Resiliency.*

Variables	B	R square	Sig.
Resiliency Happiness	.24	0.056	.00
Resiliency Religious faith	.26	0.064	.00
Resiliency Past-life adversity	-.11	0.01	.02

## 5. FUTURE RESEARCH DIRECTIONS

The study showed that happiness and religious faith contributed most to the students' resiliency, while past life adversity showed a lower effect on resiliency. For future studies, it might be interesting to examine these three variables and their effects on resiliency during the COVID-19 pandemic based on students' demographic backgrounds (e.g., religion, ethnicity, and location). This may broaden the understanding of the contributions of happiness, religious faith and past life adversities across religions, ethnicities, and locations. These factors are relevant among university students in Malaysia, who come from various cultural and religious backgrounds. Hence, this uniqueness needs to be taken into consideration in the future. We also suggest that future studies increase the number of participants involved from various states in Malaysia. Another interesting point that can be considered is to conduct a follow-up study, not just a one-shot study. This may help researchers review patterns in university students' resiliency across the different phases of Malaysia's COVID-19 lockdown. For instance, university students in Malaysia have experienced a long COVID-19 lockdown, starting with phase 1 on 18 March 2020 and continuing until now, when the country is entering an additional four progressive phases based on the National Recovery Plan (The Star, 2021).

## 6. DISCUSSION

The study revealed that participants who were happier showed higher resiliency. This happy feeling could be acquired from various sources during the pandemic, such as gaining more time to complete their academic tasks and other personal activities. However, we did not examine their sources of happiness, including their stay with their families. Nonetheless, we assume that these external variables might contribute to their happiness and need to be explored in future studies. Regarding staying with family, Tyagi et al.'s (2020) study revealed that students who were staying at home had more time to read and completed their academic tasks, which led to their happiness. All of these can help them keep their emotions under control and be more focused on their academic tasks. By staying home, they will also be less worried of being infected. This in turn can help strengthen students' resiliency when dealing with huge changes such as those they experienced during the pandemic. This is because being happy not only feels good, but it is associated with successful outcomes in life, however, we cannot deny that some students might find it difficult to feel happy, especially during the pandemic. In times of stress and uncertainty, people can experience panic and become irrational. However, in order to defeat Covid-19, it is essential to remain positive, optimistic and collaborative; choosing to be happy will support all of these (Al Atabi, 2020). This is because happiness can help people recognize their fears and anxieties, which can in turn help nourish and sustain their emotional resilience (Harrar, 2020).

In this study, we found that a higher in religious faith may increase students' resiliency during the COVID-19 pandemic. This is in line with past studies' (Agaibi, 2018, Glick, 2006; Rahmati et al., 2017) findings that resiliency can be strengthened by religious faith. Religious faith is a powerful source of hope, meaning, peace, comfort, and forgiveness for oneself (Brewer-Smyth & Koenig, 2014). Resilience appears to be an important concept in religion, and religion appears to correlate with an individual's resilience (Lower, 2014). This might be one of the reasons that contributed to resiliency. Most participants in this study held personal religious beliefs, identifying as Muslim, Christian, Buddhist, and Hindu. Only one did not disclose a religion. The participants

recognized religion and spirituality as an important part of life. Strong religious faith and spirituality are associated with increased coping mechanisms, greater resilience in dealing with stress, optimistic life orientations, greater perceived social support, and lower levels of anxiety (Pardini, Plante, Sherman, & Stump, 2001). Resiliency can be strengthened by religious faith when dealing with adversity (Agaibi, 2018, Glick, 2006; Rahmati et al., 2017).

In this study, students' past life adversity showed significant and negative effect on students' resiliency. This is in contrast to some studies' (e.g., Gartland et al., 2019; Miller-Lewis et al., 2013; Newcomb et al., 2019) findings that past-life difficulties positively contributed to students' resiliency. However, our findings are supported by the results of other studies (Lee et al., 2018; Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008). Lee et al. (2018) reported an inverse relation between psychological resilience and depressive symptoms among 294 victims of Hurricane Katrina that occurred in 2005. The participants who were experienced adversity caused by the disaster showed higher levels of depression and lower levels of resiliency. Disappointment or trauma might cause them to show low resiliency as stated by Cherry (2021), disappointment and failure can drive people to unhealthy, destructive, or even dangerous behaviours. Some people might take time to forget or recover from their past-life difficulties. According to Heid (2019), the level of an individual's resiliency depends on the context and other variables that are largely out the person's control. This means that some people who face past-life adversity might rebound and gain strength, but others might need more time to rebuild their strength after what they had experienced in the past. This in line with Norris et al. (2008) argument that resilience is a process that leads to adaptation, not an outcome that leads to stability.

Additionally, young people today might lack hardiness compare with older generations. This becomes worse when they face the consequences of pandemic, where they have limitations in the things they used to do before the pandemic. Their frequent use of social media might also reduce their social skills in understanding and dealing with people, which could have helped them gain social support. As stated by Twenge (2017), the young generation's frequent use of social media has also caused them to feel more isolated, which can affect their social skills and quality of life. Self-reliance can be fostered by creating a good relationship with the young generation and teaching them empathy and respect, as well as how to engage in a tough discussion with people who may oppose their argument (Divecha, 2018).

## **7. CONCLUSION**

The study shows that two of the examined factors (happiness & religious faith) can help students regain their resiliency in dealing with unforeseen challenges during the coronavirus pandemic. This study offers a glimpse of hope in terms of reflecting on how students' inner peace and strength (i.e., happiness and religious faith) need to be understood as resources that will deliver psychological assistance during the pandemic, apart from external supports. This may help them be more resilient when facing any difficulties related to the pandemic and any unexpected events in the future. Resilience comprises a set of skills that can be taught and learned; it is not based on genetics. It is the ability to withstand pressure, bounce back and grow in the face of stressors and changing demands (Precker, 2020). The coronavirus pandemic that caused uncertainty and mental breakdown among many university students worldwide may offer students the opportunity to reflect on the importance of happiness and religious faith while coping with coronavirus hardships. All

these factors may help them to overcome life's challenges and grow in faith. However, happiness is often overlooked in education. Therefore, it is hoped that educational systems will not discount the important contributions of happiness and religious faith in increasing the resiliency of university students. This is because resilience is one of the most effective factors contributing to healthy coping with life's disturbances (Javanmard, 2013), such as students' experiences during the coronavirus pandemic.

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## Chapter #3

### THE RELATIONSHIP BETWEEN AUTONOMOUS VERSUS EXTERNAL MOTIVATION AND REGULATORY FOCUS

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#### ABSTRACT

The objective of the study is to investigate the relationship between different forms of motivation mindsets. The integrative model of motivated behavior (Meyer, Becker, & Vandenberghe, 2004) indicates relations between the forms of motivation identified in the self-determination theory (Deci & Ryan, 1985) and the regulatory focus theory (Higgins, 1997, 1998). A concept of goal regulation proposes relations between autonomous versus external motivation and promotion versus prevention focus. The research involved 288 university students. Participants rated their motivation for three personal goals on scales assessing self-concordance (Sheldon & Elliot, 1999). The regulatory focus was assessed by the Regulatory Focus Questionnaire (RFQ, Higgins et al., 2001), which was translated into Slovak and validated. It was found that autonomous motivation was significantly positively related to promotion focus. Furthermore, autonomous motivation predicted promotion focus. Between external motivation and prevention focus a significant relationship was not confirmed. However, external motivation significantly negatively correlated with promotion focus.

*Keywords:* autonomous motivation, external motivation, promotion focus, prevention focus.

#### 1. INTRODUCTION

Behavior is a complex of factors, which explain its character. One of the important ones is motivation. When it comes to setting a goal, we take certain steps to achieve the desired state. Depending on the type of motivation, goal-striving may take on significantly different forms. For example, Higgins et al. (2001) compare two situations of a student who is studying for an exam. In the first one, a student reads not only the study material but also some additional texts. In the second situation, a student reads the study material and keeps reading over and over. We may notice in the first situation that the student is interested in learning additional optional information, in order to make progress and expand his/her knowledge. The student who studies just what is required and makes sure to learn it well probably feels the urge to carry out his/her duties and not fail. Here we illustrated the influence of specific motivation types on the process of goal attainment. Our study's aim is to investigate the relationship between different forms of motivation mindsets. The integrative model of motivated behavior (Meyer, Becker, & Vandenberghe, 2004) presents relations between the forms of motivation identified in the self-determination theory (Deci & Ryan, 1985) and the regulatory focus theory (Higgins, 1997, 1998). What are the relations between motivations defined in these theories? Is there a significant relationship between motivations? Is conceptual integration relevant?

### **1.1. Autonomous and external motivation**

According to the self-determination theory, the extent to which a goal reflects one's own interests and values differentiates the type of motivation. In other words, motivation varies within the autonomy range. More autonomy involves more interest, enjoyment, and congruence while engaging in goal achieving. Autonomous motivation arises in the process of integration of the activity with one's own self. This process may be facilitated by providing a meaningful rationale, acknowledging the individual's perspective and conveying choice rather than control. When the acceptance or internal identification with the activity does not occur, an inner conflict is experienced. External motivation, which follows pressure and demand, is in contrast to autonomous motivation. Autonomous motivation is associated with greater effort, commitment, perseverance, better performance, and other positive consequences. Feelings of anxiety, guilt, or embarrassment indicate external motivation (Deci, Eghrari, Patrick, & Leone, 1994; Deci & Ryan, 2008; Ryan & Deci, 2000; Sheldon & Elliot, 1998; Sheldon & Filak, 2008).

Sheldon and Elliot (1999) use the term self-concordance to define the extent to which one feels autonomy in goal striving. The prevalence of autonomous motivation is captured by the self-concordance index when the result is a positive value. It can be calculated by subtracting external reasons (sum of extrinsic and introjected motivation) from autonomous reasons (sum intrinsic and identified motivation) (Koestner, Lekes, Powers, & Chicoine, 2002). Touré-Tillery and Fishbach (2014) characterize autonomous motivation as process-focused. Positive emotions, satisfaction, greater persistence, and also more time spent solving the task indicate autonomy. External motivation is an outcome-focused motivation, which centers on the desired final state associated with an external reward or benefit. The indicator may be a faster movement toward the goal. Milyavskaya, Inzlicht, Hope, and Koestner (2015) use the terms *want-to* and *have-to* motivation instead of terms autonomous and external motivation.

According to Sheldon and Filak (2008), the essential notion of the self-determination theory is that there are three basic and universal psychological needs. Fulfillment of the needs leads to life prosperity. One is the need for autonomy, which fulfills the experience of compliance with one's behavior. It means that we do not feel pressure or control from outside. The second is the need for competence, which refers to the need to be capable, effective, efficient, and achieve mastery. The third is the need for relatedness, which is being satisfied by meaningful relationships with other people, and thus avoiding a feeling of alienation or exclusion from society. The need for autonomy or autonomous motivation is negatively affected by reward, threat, competition, deadlines, or supervision. We call this the "undermining" effect. Autonomous motivation is characteristic of the flow experience (see Csikszentmihalyi, 1997).

### **1.2. Promotion and prevention focus**

According to the regulatory focus theory, goal-directed behavior is regulated by two distinct motivational systems, namely promotion and prevention focus. Promotion focus is associated with achieving gains (“+1”), and failure represents non-gains (“0”). Primary concerns are nurturance and growth. This includes, for example, the achievement of ideals, hopes, and aspirations. Exceeding the status and advancing to better states is a strategic mean used to approach the desired end-state. Conversely, prevention focus is associated with achieving non-losses (“0”) and failure represents losses (“-1”). Primary concerns are safety and security. This includes, for example, the achievement of oughts, duties, and obligations. The preferred strategy is to maintain or restore the status quo and prevent falling to worse states (Higgins & Cornwell, 2016).

Förster, Higgins, and Idson (1998) illustrated the differences between the promotion focus and the prevention focus on caretaker-child interactions. In interactions that involve promotion focus, a child experiences pleasure. Hugging and kissing, and encouraging rewarding activities are all pleasant for the child. When a caretaker, for example, stops a story because the child is not paying attention, the child experiences a negative outcome. Promotion focus is concerned with advancement and accomplishment, hopes, and aspirations (ideals). In interactions that involve prevention focus, a child experiences pleasure when alerted to potential dangers. Pleasure is the absence of negative outcomes such as yelling or punishing. Prevention focus is concerned with protection and safety, duties, and responsibilities (oughts).

We may engage in goal activity differently, depending on the promotion or prevention focus of our motivation. Förster, Grant, Idson, and Higgins (2001) found that promotion focus, in the presence of success feedback, increased motivational strength as one moved closer to the goal. When there was failure feedback, the motivational strength near a goal increased with a prevention focus. Success and failure represent positive and negative outcome focused on maintaining (or inducing) a state of eagerness for promotion focus and a state of vigilance for prevention focus. Förster, Higgins, and Bianco (2003) in their studies showed that regulatory focus influenced speed and accuracy for participants in different tasks. As participants move closer to completing a task, those participants with promotion focus have greater speed but accuracy decreases. For participants with a prevention focus, speed decreases and accuracy increases. These results support the notion that motivation may influence quantity/quality differences in performance.

## 2. OBJECTIVES

As we can see, there are parallels between concepts of motivation. In the integrative model, Meyer et al. (2004) introduced a concept of goal regulation, which connects self-determination theory with regulatory focus. Motivation, according to the self-determination theory, focuses on the perceived causes of the behavior, that is, why we strive to achieve a goal. To refer to why he/she is pursuing a goal the term perceived locus of causality is used, which reflects the relative strength of internal and external inducements. The regulatory focus theory addresses the purpose of one's behavior, that is, what we are trying to do while striving to achieve a goal. The term perceived purpose refers to the general purpose in the process of goal attainment. The concept of goal regulation reflects both the reasons for and the purpose of goal-directed activity.

Meyer et al. (2004) propose that the relative salience of internal forces for behavior increases autonomous motivation, and the relative salience of external inducements increases external motivation. Relative salience means that these forces can operate simultaneously and are relatively independent. Goal-directed behavior driven internally should be perceived as the ideal to be achieved. Therefore, a promotion focus should be stronger. Externally driven behavior should be experienced as working towards the oughts that characterize a prevention focus.

We aim to examine the relations between autonomous versus external motivation and promotion versus prevention focus. Is there a significant relationship between autonomous motivation and promotion focus? Is there a significant relationship between external motivation and prevention focus? Based on the theoretical background and assumptions by Meyer et al. (2004), we have formulated two hypotheses:

*H<sub>1</sub>*: Autonomous motivation statistically significantly predicts promotion focus.

*H<sub>2</sub>*: External motivation statistically significantly predicts prevention focus.

### 3. METHOD

#### 3.1. Participants and procedure

The sample consisted of 288 undergraduate students (157 women, 131 men), aged 17-29 ( $M = 20.80$ ,  $SD = 1.65$ ). Students were non-randomly selected from the population. First, the respondents described three personal goals. Then they completed 4-item scales assessing self-concordance to each goal (Sheldon & Elliot, 1999). Finally, they completed an 11-item Regulatory Focus Questionnaire (RFQ, Higgins et al., 2001).

#### 3.2. Measures

In the beginning, the following instructions were given: *“Goals represent some desired future state that we intend to accomplish. Please, try to briefly describe three goals you are striving to achieve. Write a few sentences for each goal.”*

##### 3.2.1. Self-concordance scales (Sheldon & Elliot, 1998)

Participants were asked to rate the reasons for pursuing their goal. The 4 types of reasons for goal pursuing corresponded to a continuum of self-determination ranging from highly external to highly autonomous. Ratings ranged on a scale from 1 (*not at all for this reason*) to 7 (*completely because of this reason*). The items represented external (“striving because somebody else wants you to or because you’ll get something from somebody if you do”), introjected (“striving because you would feel ashamed, guilty, or anxious if you didn’t strive for this”), identified (“striving because you really believe it’s an important goal to have – you endorse it freely and wholeheartedly”), and intrinsic reason (“striving purely because of the fun and enjoyment that striving provides you”). According to Koestner et al. (2002), the self-concordance index is calculated by subtracting the sum of the external and introjected ratings from the sum of the intrinsic and identified ratings.

##### 3.2.2. Regulatory focus questionnaire (RFQ, Higgins et al., 2001)

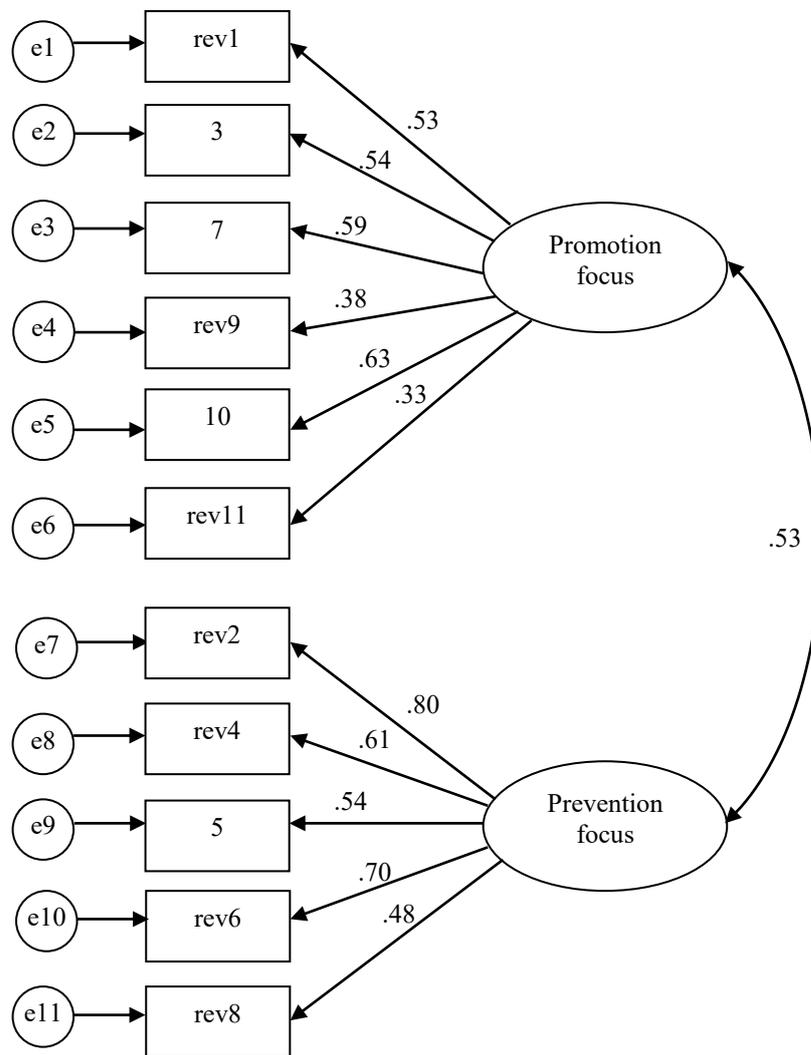
Participants were asked to answer questions about specific life events in their lives. The items assessed individuals’ subjective histories of success or failure. The 11 items loaded on 2 scales. Ratings ranged on a scale from 1 to 5 (for instance, 1- *never or seldom*, 3- *sometimes*, 5- *very often*). High scores indicate that the individual has been successful in using approach eagerness means or avoidance vigilance means to attain goals. The Promotion scale consists of 6 items (for instance, “Compared to most people, are you typically unable to get what you want out of life?”, “Do you often do well at different things that you try?”). The Prevention scale consists of 5 items (for instance, “How often did you obey rules and regulations that were established by your parents?”, “Not being careful enough has gotten me into trouble at times.”). Internal consistency of the scales was acceptable (Cronbach’s alpha was .65 for the Promotion scale and .76 for the Prevention scale). The regulatory focus predominance can be calculated via the index by subtracting the prevention ratings from the promotion ratings – the resulting positive value indicates the prevalence of the promotion focus and the negative value the prevalence of the prevention focus (Camacho, Higgins, & Luger, 2003; Cesario & Higgins, 2008; Molden & Higgins, 2004).

We translated RFQ from English to Slovak and validated it. Each of the two translators provided a translation, and then we compared the translations to each other. We also did back-translation into English to check for accuracy. By confirmatory factor analysis (CFA), we confirmed the predicted factor structure shown in Figure 1, as shown by

Higgins et al. (2001). CFA was calculated in the SPSS Amos 21. The result of the chi-square significance test was statistically significant,  $\chi^2_{(43)} = 62.74, p = .03$ . To avoid rejecting a good model, we checked the index values. The model showed an acceptable fit with the data ( $GFI = .96, CFI = .96, RMSEA = .04, SRMR = .05$ ).

Figure 1.

*RFQ's factor structure. The standardized regression coefficients  $\beta$  are shown. The numbers in the rectangles indicate the individual item of RFQ, and the „rev“ abbreviation indicates reversed item.*



Higgins et al. (2001) reported that both factors show a statistically significant correlation,  $r_{xy} = .21, p < .001$ , and both scales have good internal consistency,  $\alpha = .73$  for promotion focus and  $\alpha = .80$  for prevention focus. We found in our data a similar

correlation,  $r_{xy} = .17$ , by calculating the Pearson correlation coefficient. The internal consistency of the Slovak version of RFQ was satisfactory,  $\alpha = .65$  for promotion focus and  $\alpha = .76$  for prevention focus.

#### 4. RESULTS

Data were analyzed using the statistical software SPSS 21.0. We calculated the mean score for self-concordance scales across the three goals. Then, we calculated autonomous motivation by summing mean scores of intrinsic and identified reasons, and external motivation by summing mean scores of external and introjected reasons. The relationship among the variables was explored using correlational and regression analyses. Results of the correlational analysis are shown in Table 1.

*Table 1.*  
*Means, standard deviations and Pearson correlation coefficients among variables.*

<b>Motivation</b>	<b><i>n</i></b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>1.</b>	<b>2.</b>	<b>3.</b>	<b>4.</b>
1. autonomous	285	8.52	1.58	–	-.33**	.25**	.04
2. external	285	4.99	1.70		–	-.22**	-.01
3. promotion	288	21.27	3.54			–	.17**
4. prevention	288	15.86	3.98				–

*n* = sample size, *M* = mean, *SD* = standard deviation, \*\*  $p < .01$

Preliminary analysis shows that autonomous motivation was statistically significantly negatively correlated with external motivation,  $r_{xy} = -.33$ ,  $p < .01$ . The promotion focus was statistically significantly positively correlated with prevention focus,  $r_{xy} = .17$ ,  $p < .01$ . The calculation of the self-concordance index shows that autonomous motivation dominated,  $M = 3.52$ ,  $SD = 2.68$ , and according to the RFQ index calculation, it dominated the promotion focus,  $M = 5.41$ ,  $SD = 4.86$ .

The main results show that autonomous motivation was significantly positively correlated with promotion focus,  $r_{xy} = .25$ ,  $p < .01$ . External motivation did not correlate with prevention focus,  $r_{xy} = -.01$ ,  $p > .05$ , but we found a significant negative relationship with promotion focus,  $r_{xy} = -.22$ ,  $p < .01$ . Therefore, we excluded from further analysis the examination of the relationship between external motivation and prevention focus.

To examine whether autonomous motivation predicts promotion focus, we ran a linear regression analysis. The relationship between the predictor and the dependent variable was linear. The points in the graph, showing the normal distribution of residues, were placed on the diagonal line without significant deviations. After checking the Mahalanobis distance at the critical chi-square value set at  $\chi^2_{(1)} = 10.83$ , we identified eight cases that exceeded this critical value (max.  $\chi^2_{(1)} = 16.91$ ). Casewise diagnostics told us that two cases were more than three standard deviations away from the mean and may well be outliers (these were  $-3.09$  and  $-3.20$ ). We provided further diagnostics by using Cook's distance measure (*D*). The maximum observed *D* was  $.09$  ( $SD = .01$ ). The points were not a noticeable influence as long as *D* was less than 1. Nevertheless, based on the evaluation of the distribution of standardized residues on the scatter plot, we deleted eight identified cases. By deleting these extreme cases exceeding the critical chi-square value of the Mahalanobis distance, we improved the model's ability to estimate the values of the dependent value. With this step, we evaluate our linear regression calculations as

sufficiently valid. Therefore, the subsequent statistical analysis included  $n = 277$  cases for autonomous motivation and  $n = 280$  cases for promotion focus.

The correlation coefficient between autonomous motivation and the predicted value of the promotion focus was  $r_{xy} = .29$  ( $p < .0005$ ). The coefficient (index) of determination had the value  $r_{xy}^2 = .08$ , which means that through autonomous motivation we can explain 8.2 % of the variability of the promotion focus. Our regression model was statistically significant,  $F_{(1)} = 24.57$ ,  $p < .0005$ ). The standardized regression coefficient had a value of  $\beta = .29$  ( $b = .85$ ,  $SE = .17$ ,  $t = 4.96$ ,  $p < .0005$ , 95 %  $CI$  [.51, 1.19]). Based on the score in autonomous motivation, it is possible to estimate the score in the scale of promotion focus.

## 5. DISCUSSION

Meyer et al. (2004) created a concept of goal regulation, which presupposes a connection of autonomous motivation with a promotion focus and a connection of external motivation with a prevention focus. This assumption is based on parallels that exist in these motivation theories. Internally motivated behavior should be perceived as achieving the ideals (stronger promotion focus), and externally motivated behavior should be perceived as achieving the oughts (stronger prevention focus).

As one may expect, a statistically significant negative relationship was found between autonomous and external motivation, but such a result is not always confirmed as reported by Koestner, Otis, Powers, Pelletier, and Gagnon (2008). Between the promotion and prevention focus we found a statistically significant positive relationship as did Higgins et al. (2001) or Pollack, Forster, Johnson, Coy, and Molden (2015). Comparing the results – a negative relationship between autonomous and external motivation versus a positive relationship between the promotion and prevention focus – we came to the supposition that the relations between types of motivation are more complex.

We confirmed the assumption formulated in hypothesis  $H_1$  that autonomous motivation statistically significantly predicts the promotion focus. Despite the apparent theoretical context, we failed to support all of the assumptions formulated by Meyer et al. (2004). Hypothesis  $H_2$ , that the external motivation will statistically significantly predict prevention focus, was not confirmed. Vaughn (2017) in her research showed that promotion-focused experiences are higher in support for autonomy, competence and relatedness than prevention-focused experiences. Feeling highly competent and autonomy supported could enhance promotion focus eagerness. On the other hand, less need-supportive experiences could enhance prevention-focused vigilance. Altogether, regulatory focus can affect subjective need support, and support for needs can influence subjective regulatory focus.

We found that external motivation was statistically significantly negatively correlated with promotion focus. According to the Vaughn's (2017) research, we could say that low autonomy, which defines external motivation, enhances prevention focus. In which case the promotion focus is negatively affected. We are considering the idea that an individual with external motivation primarily lacks promotion focus – we found a negative correlation between external motivation and promotion focus instead. However, we still think that prevention focus may be significantly positively correlated with external motivation in a special personal or situational setting. Lalot, Quiazade, and Zerhouni (2019) revealed a fit between extrinsic motives and prevention focus. They found that if individuals are externally motivated to care about their health, then an intervention framed in terms of prevention will be more effective in improving people's nutrition. They suggest that intrinsic motives drive behavior regardless of external cues. We consider this a useful

observation when comparing autonomous and external motivation. Apart from external cues, we suppose that the relationship between external motivation and prevention focus could also be mediated or moderated by the presence of another important variable such as anxiety (Strauman et al., 2015).

## 6. FUTURE RESEARCH DIRECTIONS

Future researchers should re-examine the relations between types of motivation, for example, there seems to be no consensus on whether a relation between autonomous and external motivation is negative or positive (Koestner et al., 2008). We also suggest to explore the theory concerning mediation or moderation analysis in order to examine in more detail the relationship between external motivation and prevention focus. We are considering that an experimental design would be more accurate for the verification of our hypotheses. Whereas the RFQ items assess individuals' subjective histories of success or failure, it is necessary to consider this RFQ's specification in different settings and optionally use an alternative to measure regulation focus. We studied a specific population (undergraduate students) and we would expect our results to replicate on different population as well.

## 7. CONCLUSION

The present study aimed to measure the relationship between autonomous versus external motivation and promotion versus prevention focus as proposed by the concept of goal regulation (Meyer et al., 2004). We hypothesized that there is a significant relationship between autonomous motivation and promotion focus; and external motivation and prevention focus. In conclusion, our results showed that autonomous motivation was significantly positively related to promotion focus. Furthermore, autonomous motivation predicted promotion focus. Between external motivation and prevention focus a significant relationship was not confirmed. However, external motivation significantly negatively correlated with promotion focus. In practice, knowledge about the link between motives identified in the self-determination theory and the regulatory focus theory can be used especially for planning more effective intervention programs.

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## Chapter #4

### THE EFFECT OF SELF-CARE PROGRAM ON YOUTH'S ATTITUDE TOWARDS PHYSICAL AND PSYCHOLOGICAL SELF-CARE IN TIMES OF THE COVID-19 LOCKDOWN

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#### ABSTRACT

One of the major concerns among the relevant public authorities during the COVID-19 pandemic is the attitude and behavior of the Malaysian society regarding compliance with self-care COVID-19. The Malaysian Ministry of Health continually remind people to adhere to the Standard Operating Procedure (SOP) for COVID-19. To support the authorities' efforts, a one-day self-care COVID-19 programme based on social psychological approach involving 10 youths with a mean age of 17.35 (SD=3.36) was implemented in Bongol village, Tamparuli. Before the programme began, all the participants were registered, and their body temperatures scanned to ensure that they were free from any COVID-19 symptoms. The activities comprised an ice-breaker, a talk on personal self-hygiene, a 20-minute self-care video, personal self-reflections, a group exercise, a community song, and a two-way discussion on self-care. The participants' attitudes were measured before and after they completed the one-day programme. The study showed that there is a significant difference between the participants' pre- and post-study attitudes towards self-care. The study results showed that the COVID-19 self-care programme can help foster positive youth attitudes towards self-care. The study suggested that each party needs to support the COVID-19 programme by delivering self-care messages to Malaysian communities in rural areas.

*Keywords:* attitude, cognitive, affective, psychomotor, self-care program.

#### 1. INTRODUCTION

In January 2020, the World Health Organization (WHO,2020a,2020b) declared that the COVID-19 outbreak was a public health emergency of international concern and that there was a high risk of it spreading to countries around the world. The spread of the virus caused great concern among both the Malaysian public and government. In mid-March, Malaysia had the highest number of COVID-19 cases in Southeast Asia (Samah, Muhammad, Sulaiman, & Harun, 2020). This forced the Malaysian government to impose the 2020 Movement Control Order (MCO), which began on 18 March 2020 and ended on 28 April 2020. The increase in COVID-19 cases caused the MCO to be upgraded to an Enhancement Control Order, which was in effect from 29 April until 12 May 2020. To ensure that the situation was under control, the government then upgraded it to a Recovery Movement Control Order (RMCO) (Yusof, 2020). Within each phase of the MCO, the government and the Malaysian Ministry of Health continuously reminded people to adhere to the COVID-19 standard operating procedures (SOPs), such as washing hands regularly; wearing masks; maintaining a distance of at least one meter from other people; avoiding confined, crowded, and closed spaces; and maintaining a healthy lifestyle. In their efforts to

raise public health awareness regarding COVID-19, the authorities should focus on eradicating media manipulation, myths, and information that is not based on scientific facts (Samah et al., 2020). The governments, media, doctors, researchers, celebrities, police, and other stakeholders of the society appealed to the public to avoid public gatherings including sports, religious ceremonies, family functions, meetings as well as classes in school, to prevent the global spread of coronavirus infection (McCloskey et al., 2020). Despite these efforts, many people ignore the importance of social distancing due to attitudinal issues. Accurate information and active action by the relevant authorities to combat the spread of COVID-19 can help create awareness and cultivate positive attitudes towards self-care among members of society.

## **2. BACKGROUND**

People have been practising self-care for thousands of years, and it has been applied mindfully by global societies to deal with the COVID-19 pandemic. The Canadian Mental Health Association recommends self-care as a coping strategy in dealing with the pandemic (Wise, 2020). Physical distancing, good respiratory hygiene, and hand washing are important examples of self-care actions that everyone can take every day to protect against COVID-19. Many other aspects of self-care such as cultivating healthy sleep habits, managing emotions well and gaining life satisfaction, can make a difference in human health and well-being during the COVID-19 pandemic (Wise, 2020). The ability to care for ourselves can make us feel stronger, more resilient, and better able to care for others, which is what is needed as the world faces the COVID-19 pandemic (Wise, 2020).

Maintaining a positive attitude to self-care might be challenging for some people. Some might be hesitant to follow the MCO regulations or may forget to follow the general SOPs because they do not align with their cultural norms and because of psychological reactance. Psychological reactance is a psychological response that occurs when one perceives one's freedom as being threatened, and it often leads to behaviour that is the exact opposite of which was sought by those who issued the instructions (Steindl, Jonas, Sittenhaler, Traut-Mattausch, & Greenberg, 2015). For instance, some Malaysians ignored the MCO might be because lack awareness regarding the seriousness of the COVID-19 pandemic. This was revealed in Samah et al's study (2020) that 3,211 Malaysians from various backgrounds are unaware of the severity of COVID-19 and its impact on human health. The results revealed that 37 percent of the respondents were unaware that COVID-19 can cause serious infections, such as pneumonia, and 24 percent of the respondents did not realise that washing one's hands with soap for 20 seconds can help prevent the spread of the virus. In addition, most Malaysians possess an average level of knowledge and a neutral attitude towards social-distancing practices. Malaysians' lack of awareness about the seriousness of the COVID-19 pandemic might be because they need time to adopt new attitudes, behaviours, and norms. Besides lack of awareness, Malaysians also show non-compliance behaviour with SOP and MCO regulations: for instance, continued interstate travel, not wearing face masks, not quarantining after returning from abroad and bringing children under two years old to public places, although they know doing these things is highly risky (Aziz, Ali, Noor., & Sulaiman, 2021a).

For many people, self-care does not come naturally nor easily, and it is influenced by numerous factors, such as attitude, knowledge, and awareness (Di Iorio, 2020). Past studies (e.g., Arina, Mohammad, Rezal, Tham, Suffian, & Emma, 2020; Zhong et al., 2020) revealed that people's attitudes towards self-care have improved significantly due to the COVID-19 pandemic. A study conducted by Zhong et al. (2020) indicated that there is a

significant correlation between a higher level of COVID-19 knowledge; more positive attitudes; and, most importantly, the improved adoption and implementation of safety practices during the rapid rise of the outbreak. In regard to rural communities, some might face difficulties in accessing COVID-19 necessities, such as face masks, hand sanitisers, and information about the virus. People in rural areas face different health challenges depending on where they are located (Centre for Disease Control and Prevention, 2020). Throughout the MCO, the Malaysian government took extra effort to provide food supplies and other necessities to the rural areas of Sabah and Sarawak with the assistance of the Malaysian Armed Forces (Daim, 2020). Support in the form of food supplies and necessities from the authorities should be accompanied by the implementation of awareness and attitude programmes and interventions to create more positive attitudes towards self-care among rural people. Past studies (e.g., Nyakarahuka et al., 2017, Roy et al., 2020) have shown that knowledge and attitude towards self-care are important elements in dealing with pandemic. Individuals' attitudes, knowledge, and awareness play a significant role in the development of habits and self-care. The public health sector could enhance community members' knowledge and attitudes by supplying more educational materials; providing health education on epidemic preparedness; and using appropriate communication channels, as proposed by the community members themselves (Nyakarahuka, 2017), such as the self-care programme that was conducted in Bongol village in collaboration with university students.

To implement a good attitude change programme towards self-care in Bongol village, we took the social psychological Yale model of communication and persuasion, which focuses on the source, messages, audiences, channel, and effect elements (Hovland, Janis, & Kelly, 1953), into consideration. This model has already been used as a guideline to implement attitude change programmes that focus on various attitude objects in past studies (e.g., Grace, 2003; Aziz et al., 2021b; Cosmas, 2018).

### **3. DESIGN**

This study followed a quasi-experimental, pre- and post-study design that involved 10 participants. This is based on a one-group pre-test–post-test design (Campbell & Stanley, 1963) without a control group for comparison. This method was used because it can examine the effectiveness of the self-care programme. The quasi-experimental study most likely to be conducted in field settings in which random assignment is difficult or impossible. (Price, 2013). This method resembles experimental research, but it is not true experimental research. In this study, we only involved 10 participants due to the COVID-19 standard of procedures suggested by the Malaysian government. We also followed the RMCO and adhered to COVID-19 SOP regulations, which stipulated that there could only be a small number of participants in the programme.

### **4. OBJECTIVES**

To support and deliver positive messages to the rural community, the self-care programme was implemented in collaboration with the Bongol Village Community Management Council during the RMCO. The aim of the programme is to cultivate a positive attitude towards self-care among the youth in the village, particularly during the COVID-19 pandemic. The self-care programme was implemented on 26 June 2020 and adheres strictly to the COVID-19 SOP regulations. The RMCO was announced by the Malaysian prime minister on 7 June 2020 and was in effect from 10 June 2020 until 31 August 2020, with more lenient restrictions compared to the MCO (Flanders Trade, 2020).

## 5. METHODOLOGY

Ten participants took part in the one-day programme and the pre- and post-studies. They originated from the Bongol village, and their ethnicity was Kadazandusun. There were seven females and three males with a mean age of 17.80 (SD = 3.36). In this study, we only involved 10 participants due to the COVID-19 standard of procedures suggested by the Malaysian government. The COVID-19 SOPs also stipulated that private gathering should be limited to no more than 20 people at any one time during the MCO, and this remained valid during the RMCO (Thomas, 2020). Letters of permission were granted by the head of the village and the head of the village community management council before we requested permission from the faculty and university. The self-care programme was conducted once the approval letter from the university was released.

### 5.1. Research instrument

A set of questionnaires consisting of two parts; demographic profile and attitude towards self-care (i.e., physical and psychological) was distributed. The part A measured participants' demographic information such as ethnicities, ages, education levels, parents' occupations and family health. While for Part B measure attitude which comprised of three attitude elements (cognitive, affective and psychomotor) towards self-care (physical and psychological). Attitudes towards self-care comprised caring about physical and psychological aspects, such as having adequate sleep, exercising consistently, understanding mood changes, spending time on self-reflection, showing interest in learning strategies to overcome stress, and seeking to understand the meaning of life in the midst of difficulties. Eight items measured attitudes towards self-care and focused on the three elements of attitude (i.e., emotion, beliefs, & psychomotor). The sample items for emotion, cognition and behaviour are based on the sequence emotion ('I am interested in learning ways to overcome my personal stress at home or school'), cognition ('I should be aware of my internal feelings') and behaviour ('I will exercise consistently everyday').

The scale response was based on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). These items were created by referring to the definition of self-care, self-care scale (e.g., Gonzalez, 2019; Headington Institute, n.d.). The reliability values of the complete set of questionnaires were tested in the pilot study with 32 participants comprising university students, and the reliability values were acceptable (0.72).

## 6. RESULTS

Ten participants completed the self-care programme and the pre- and post-study questionnaires. Based on the demographic profile of participants, they came from various academic background. Seven of them are still studying in secondary school and the other three are college and university. Most of the fathers working as farmers and their mothers are housewife. The mean age of the participants in this study was 17.80 years (SD = 3.36). The reliability values for attitudes towards self-care was 0.75 for the pre-study and 0.76 for the post-study, and both values were acceptable. The convergent validity of the two components of the attitude construct (i.e., physical self-care and psychological self-care) was also measured by correlating the two components with the attitude towards self-care construct (see Table 1).

*Table 1.*  
*The Validity Convergent of the Two Self-Care Construct with the Attitude Towards Self-Care Construct for Pre- and Post-Study.*

Attitude construct	Pre-study Attitude towards self-care r values	Post-study Attitude towards self-care r values
Attitude towards self-care (physical)	.82*	.77*
Attitude towards self-care Psychology	.99*	.95*

Note.  $p < .005^*$

The study showed that the two components showed high correlation with the attitude construct, indicating that each construct revealed a similar attitude object (i.e., attitude towards self-care). To compare the scored attitude with self-care before and after the programme's implementation, we used the non-parametric Wilcoxon signed-rank test for a repeated measurement of the 10 participants. The study showed that there was a significant difference between the pre- and post-studies regarding the youths' attitudes towards self-care. The Wilcoxon signed-rank test also confirmed that the attitude towards self-care scores were significantly higher after the self-care programme ( $M = 33.60$ ,  $SD = 3.72$ ,  $n = 10$ ) compared to before the programme ( $M = 31.40$ ,  $SD = 4.53$ ,  $n = 10$ ),  $z = -2.08$ ,  $p = .037$ ; see Table 2).

*Table 2.*  
*The Wilcoxon Signed-Rank Test Results to Examine Differences in Mean Attitude Towards Self-care Before and After the Self-care Programme's Implementation.*

Attitude towards Self-care	N	Mean score	SD	z score	Sig.
Before Program	10	31.40	4.53	-2.08	.037
After Program	10	33.60	3.72		

We also obtained feedback from each participant about the self-care. One of the participants stated that the self-care programme helped her widen her knowledge of the importance of self-care and how to find it through exercise and other activities. Another participant responded that the self-care programme helped enhance his knowledge of self-care particularly during the COVID-19 pandemic. Additionally, all participants stated that the self-care programme should be conducted for other rural youths in Sabah amid the pandemic.

## 7. DISCUSSION

The self-care programme in the Bongol village was implemented during the RMCO. Although the number of COVID-19 cases has decreased, it is important to keep sharing and creating awareness of the importance of physical and psychological self-care, particularly in this rural community, during the pandemic. The study showed that between the pre- and post-study periods, there was a significant difference in participants' attitudes towards self-care: Attitudes were more positive after the participants completed the one-day self-care programme. Various factors might contribute to these positive and significant results, such as the activities that were organised by the 28 students who took the attitude-change course during semester two. The organised activities entailed a brief talk by the organiser on self-care during the COVID-19 pandemic, and this was followed by the delivery of COVID-19 information, self-care talks, and a video presentation by the psychology students. Positive talks and self-care information delivered to participants might influence the cognitive, emotional, and psychomotor elements of attitude. These three elements were thoroughly discussed in the video presentation, which lasted 20 minutes. The programme instructor also provided self-reflection question-and-answer sessions, during which participants could thoroughly discuss the content of the video and self-care related to the COVID-19 pandemic.

Each activity that was arranged in this programme contributed to the participants' positive thoughts or beliefs about self-care, particularly during the RMCO. This possibly triggered more positive emotions regarding engagement with self-care behaviour and showed greater intentions to perform self-care behaviour, such as exercising consistently every day, getting adequate sleep, spending more time on self-reflection, and learning ways to overcome stress. In regard to changing people's attitudes, all three elements of attitude need to be given attention because they are interrelated. For instance, if participants merely had positive thoughts or beliefs about self-care but showed a lack of intention to perform self-care behaviours, this might have affected their overall attitudes towards self-care. To ensure that the attitude-change programme runs well, it is important to refer to the Yale Attitude Change Model (Hovland et al., 1953), which places emphasis on the practical question "Who says what, in which channel, to whom and with what effect?". In the Bongol village self-care programme, "who" represents university students and lecturers; "says" refers to the self-care messages and activities; "whom" refers to the programme's recipients (i.e., 10 youths in Bongol village); and "what effect" refers to the participants' attention, comprehension, and acceptance, which may yield attitude changes among the participants.

During the programme, each participant was provided with a mask and a small bottle of hand sanitiser. The participants were also reminded to wash their hands regularly with the hand-sanitiser gel that was provided in the community hall. In addition, COVID-19 infographics were placed in strategic locations in the community hall. These activities may improve participants' attitudes, awareness, and interest in caring for themselves, and it is hoped that the positive attitudes gained from the programme will remain after the pandemic.

## 8. FUTURE RESEARCH DIRECTIONS

In the future, it is suggested that the self-care program not only be conducted in a one-shot program but with a follow-up program. Some participants might need more time to reflect and understand the content of the program. The follow-up programs should be considered as these can help maintain the positive elements that youth have gained from the program (Cosmas, 2018). In addition, by running a follow-up program, participants will get more additional information and relate them with the previous program. Besides, it is good if this program can involve more participants from different backgrounds and not only focus on youth. In addition, the duration of the program needs to be extended because it will give more opportunity for both parties, i.e., researchers (the organizer of the self-care program) to deliver positive messages to the participants. The duration of time also needs to be taken into consideration besides the types of activities in order to implement an effective program (Cosmas, 2015).

## 9. CONCLUSIONS

The active efforts made, and initiative shown by the Malaysian government, combined with the support of the relevant authorities and community, can lead to success if all parties work together to reduce the number of COVID-19 cases to zero and to effectively manage the COVID-19 pandemic. Each party should support the other and continue persuading people to follow the SOPs, such as practising personal self-care and looking out for the people around them. This is because self-care is not only a tool for coping with the pandemic but also about honouring ourselves; in doing so, we say to ourselves and to everyone else, "I matter" (Di Iorio, 2020). Based on Di Iorio's statement, we conclude that the self-care messages are not only shared with the people who are close to us but also with the members of underprivileged communities, who may lack accessibility to COVID-19 information and necessities. During this time, it is important to run self-care and any other programmes related to COVID-19 awareness that may inculcate positive attitudes and behaviours among the members of rural communities. Doing this may help protect Malaysia from COVID-19, which has affected so many people around the globe. These programmes may create more positive attitudes towards self-care, and it is hoped that in the long term, these positive attitudes will remain and will become part of the participants' daily self-care routines after the pandemic.

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## Chapter #5

### PRIVACY AND DISCLOSURE IN AN ONLINE WORLD

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#### ABSTRACT

The purpose of this study was to examine factors that influence an individual's choice to share personal information online. Age, gender, personality, overall media exposure, internet trust, and perceived risks and benefits were examined in relation to a willingness to share personal information that differed in sensitivity (address, medical records, credit card) and differed in target audience (social media, online store, general public). A total of 202 adults participated in this survey. The results indicated that willingness to share personal information on social media was predicted by having higher scores on extraversion, agreeableness, and negative emotionality, as well as higher scores on perceived purchase benefits and total media exposure. In terms of willingness to share personal information with an online store, total media exposure was a significant predictor along with higher extraversion and lower conscientiousness scores. Finally, willingness to share personal information with the general public was predicted by overall media exposure. Participants generally believed that there were risks involved in sharing personal information, but these risks were considered to be slight. As well, they only slightly disagreed when asked if the internet could be trusted, and were neutral on whether there were purchase benefits to providing personal information.

*Keywords:* privacy, personal information, personality, social media use.

#### 1. INTRODUCTION

E-commerce transactions have become increasingly more popular during the global COVID-19 pandemic. To provide services, online stores require personal information such as credit card numbers, addresses and names. However, increasingly, people are willing to share personal information on other platforms such as social media, where access to this private information is not always necessary.

The purpose of this study was to examine factors that influence an individual's choice to share personal information online. Specifically, the role of personality, overall media exposure, internet trust, and perceived risks and benefits were examined in relation to a willingness to share personal information that differed in sensitivity (high school grades, medical records, bank account balance) and differed in target audience (social media, online store, general public).

Researchers studying willingness to share personal information online have described what is known as the paradox effect (Brown, 2001; Norberg, Horne, & Horne, 2007). The paradox effect refers to the observation that people often state that protecting their private information is important to them, but their behaviour indicates otherwise. In an online forum, people disclose personal details that are not always necessary. What accounts for the privacy paradox? One theory that has garnered a lot of attention is privacy calculus (Culnan & Armstrong, 1999). This theory states that individuals engage in a cost/benefit analysis – if the benefits exceed the costs or risk, the individual is more likely to disclose personal information (Lwin & Williams, 2003; Thompson & Brindley, 2021). However, people will

often disclose personal details when it is not necessary and there is little or no benefit to the individual. For example, Norberg et al. (2007) reported that when shopping in “real” stores, customers often provide phone numbers when asked by salesclerks, yet this information is not necessary for the transaction to be completed, and nothing is gained by the customer.

Have we become desensitized to sharing personal information? Both and Hansen (2018) examined this question in a study that assessed whether people were willing to share personal information in exchange for cookies and cupcakes. The idea for this study came from an article written by Waldman (2014) in which she reported how a performance artist exchanged cookies for personal information at the Dumbo Arts Festival in Brooklyn, New York. The performance artist found people were willing to provide personal information such as their fingerprints, driver’s license, the last 4 digits of their Social Security number, etc., in exchange for cookies. Based on this idea, Both and Hansen (2018) examined how willing people were to share personal information in exchange for baked goods. Their study was conducted in the foyer of a local library where a table was set up with baked goods, and a banner was prominently displayed that read “Questions for Cookies.” Patrons who asked about the study were told that if they participated, they could earn points for volunteering personal information, and these points could be cashed in for cookies and cupcakes, depending on their score. Willing participants signed a consent form that indicated that the study was voluntary, and that it was their choice to answer any of the questions. Participants completed a short survey that asked them to provide sensitive information such as their mother’s maiden name (often used as a security question for banks). They were also asked if they would show a copy of their drivers’ license (which included their name, address, date of birth, eye colour, and photo). As well, they were asked if the researchers could snap their photo and take their thumbprint. Depending on the sensitivity of the information, points were allocated to each item and these points could then be redeemed for 1 cookie (1-10 points), 2 cookies (11-20 points), or 3 cookies or a cupcake (21-30 points). Surprisingly, 80% of participants earned the cupcake, and more than half the participants achieved the maximum 29-30 points. It should be noted that participants had to engage in certain behaviours (e.g., show their driver’s license and have their thumbprint or photo taken). From the results of this study, it appears adults were willing to barter away their personal information in exchange for a simple cupcake, casting doubt on the privacy calculus theory.

Clearly there is more at play than a cost/benefit analysis. While many individuals will disclose personal information for loyalty cards, extent of privacy concerns, risk perceptions and trust contribute to the decision-making process (Kruikemeier, Boerman, & Bol, 2020). According to social contract theory (Fogel & Nehmad, 2009), an implied social contract exists in the mind of the consumer wherein they expect the online business to protect their private information. The more confidence or trust the consumer has in the online business, the more reliable they are perceived to be (Kruikemeier et al., 2020).

Schubert et al. (2018) found that people were more likely to share information within close relationships than with the general public, and the more sensitive the information was, the less likely they were to share. However, the context (social media versus an online store) also played a role. Thus, sensitivity of information is an important consideration along with the closeness of the relationship (family, friends, colleagues, the broader public) and the context (social media versus an online store).

Willingness to share personal information has also been examined in relation to personality. Costa and McCrae (1992) described personality in terms of five traits: neuroticism, extraversion, openness, agreeableness, and conscientiousness. These traits describe dispositions in individuals and may be a lens through which they view their social

world. Robinson (2018) found a relation between neuroticism and attitude toward disclosing personal information online. Yeh et al. (2018) found agreeableness correlated positively with privacy concerns. Bansal, Zahedi, and Gefen (2016) examined personality and context (websites that were high versus low in monetary sensitivity) in relation to willingness to disclose personal information. They found agreeableness and emotional instability correlated positively with privacy concern. Extraversion correlated negatively with privacy concern, but this correlation was dependent on the context. The authors concluded that personality traits that were socially oriented affected privacy disclosure, but context also played a role. Given the paucity of data on personality traits, further examination of their influence in willingness to share private information is warranted. As well, frequency of internet usage is often used as a covariate in analyses (e.g., Walrave & Heirman, 2013), but may be a predictor in a regression analysis. In other words, media exposure in terms of frequency of online banking and shopping may affect how willing people are to share private information.

The present study examined factors that influence an individual's choice to share personal information online. Based on prior research, personality traits, overall media exposure, internet trust, and perceived risks and benefits were assessed. These variables were examined in relation to a willingness to share personal information that differed in sensitivity (name, medical records, address, tax return) and differed in context (social media, online store, general public).

## 2. METHOD

### 2.1. Participants

The participants consisted of 202 adults between the ages of 19.0 and 54.4 years. The majority were young ( $M$  age = 22.46 years,  $SD = 5.77$ ). In this sample, 80.7% identified as being women, 17.8% as men, and 1.5% as transgender. In terms of marital status, 83.7% were single, 14.8% were married or living common law, and 1.5% were divorced. Participants were mainly Caucasian (88.6%) and educated (90.1% had completed at least some university or community college courses). Participants were recruited through announcements in psychology courses at the university, and a link to the online study could be shared with others via social media.

### 2.2. Measures

**Demographic Questionnaire.** Participants were asked a series of questions regarding age, gender, marital status, education level, and ethnicity.

**The Big Five Inventory – 2 (BFI-2; Soto & John, 2017).** The BFI-2 is commonly used to measure five personality traits: Negative Emotionality (or neuroticism), Extraversion, Open-mindedness, Agreeableness, and Conscientiousness. Scores on this measure can range from 1 to 5, with higher scores more indicative of the trait. The measure has excellent psychometric properties, and these are described elsewhere (see Soto & John, 2017). In the current study, the internal reliability was good (Cronbach's  $\alpha = .85$  for Extraversion;  $.79$  for Agreeableness;  $.87$  for Conscientiousness;  $.91$  for Negative Emotionality; and  $.82$  for Open-Mindedness).

**Purchase Benefits Survey (Robinson, 2018).** Robinson (2018) adapted this scale based on purchase benefit questions from Gupta, Iyer and Weisskirch (2010). The measure consists of five questions, such as “*The company tailors their product offerings to my tastes.*” Participants rated the importance of these benefits on a 7-point scale where

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1 = *not at all important* to 7 = *extremely important*. An overall score was computed, and the scale had good internal reliability in this study (Cronbach's  $\alpha = .85$ ).

**Risk Beliefs Scale** (Malhotra, Kim & Agarwal, 2004). Malhotra et al. (2004) adapted this scale from Jarvenpaa, and Tractinsky (1999). The Risk Beliefs Scale consists of four questions such as "*In general, it would be risky to give personal information to online companies.*" Participants rated their agreement on a 7-point scale from 1 = *strongly disagree* to 7 = *strongly agree*. A total score was computed for this scale, and the internal reliability of Cronbach's  $\alpha = .86$  was good.

**Trust in the Internet** (Robinson, 2018). Robinson (2018) adapted this scale based on internet trust questions from Dinev and Hart (2006). The scale consists of four questions such as "*The internet is a reliable environment in which to conduct business transactions or personal purchases.*" Participants rated the extent to which they agreed with the items on a 7-point scale where 1 = *strongly disagree* to 7 = *strongly agree*. An overall score was computed, and the scale had good internal reliability in this study (Cronbach's  $\alpha = .82$ ).

**Media Exposure Scale.** For the purpose of this study, three questions asked participants how often they shop online, bank online and use Apps that ask for personal information. These questions were rated on a scale from 1 = *never*, 2 = *rarely*, 3 = *occasionally*, 4 = *frequently*, and 5 = *very frequently*. The scores from the three questions were summed to give an overall total score of media exposure.

**Willingness to Share Information** (adapted from Schubert et al., 2018). Shubert et al. (2018) examined how willing people were to share personal data. They varied the sensitivity of information (such as high school grades, medical records, last year's tax return, gender, education, ethnicity, current location, address) in different contexts (such as a social media website, an online store website, family, friends, a broader public). These questions and the format were adapted for the present study. Three domains were used in the present research (a social media website, an online store, and the broader public), and the sensitivity of information questions were broadened to include more items such as bank account balance, credit card information, phone number, drivers' license photo, etc. Participants rated how likely they would share their personal information for each of these questions in each of the three domains. The items were rated on a scale of 1 = *extremely unlikely* to 5 = *extremely likely*. In total, 24 questions were asked in each domain (these can be found in Table 1), and an overall average score was computed for each domain. Cronbach's  $\alpha = .88$  for the 24 items comprising the willingness to share information on a social media platform like Facebook or Twitter; Cronbach's  $\alpha = .88$  for sharing information with an online store; and Cronbach's  $\alpha = .92$  for sharing information with the general public.

### 2.3. Procedure

Participants were recruited from psychology courses at the university. They read a description of the study and were directed to Qualtrics, an online survey platform. A consent form and the demographic measure were always presented first, followed by the remaining questionnaires in random order. The entire survey took about 40 minutes to complete, and students could earn one bonus point toward their final grade (students had the option of earning bonus points through other means if they did not wish to participate in research). The survey link could also be shared on social media platforms. As an incentive to participate, all participants also had the option of being entered into a draw for a \$50 Amazon gift card.

### 3. RESULTS

Participants only slightly agreed ( $M = 5.1$  on a 7-point scale) that there were risks involved in sharing personal information. When asked if the internet could be trusted, they only slightly disagreed ( $M = 3.3$  on a 7-point scale), and they were neutral on whether there were purchase benefits ( $M = 4.4$  on a 7-point scale).

Table 1 presents the average scores for items on the Willingness to Share Personal Information measure by target audience (either social media, an online store, or the broader public). Based on these scores (on a scale of 1 = *Extremely Unlikely* to 5 = *Extremely Likely*), on social media, respondents indicated they were comfortable sharing personal information such as their name, gender, photo, education, ethnicity, marital status, and date of birth. They were not comfortable sharing their blood type, credit card information, address, bank account or tax information. With an online store, respondents were comfortable sharing information such as their email address, gender, and name. They were not comfortable sharing information such as their photo or mother’s maiden name. With respect to the broader public, respondents were comfortable sharing information such as their gender and ethnicity but were not comfortable sharing information such as their name or phone number.

To assess whether there were statistically significant differences on willingness to share personal information by target audience, paired samples *t*-tests were computed. For example, as indicated in Table 1, the item “*would you share your email address on a social media website like Facebook or Twitter*” had a  $M = 3.26$  (on a 5-point scale), indicating that participants, on average, were neutral. However, they were more likely to share this information with an online store ( $M = 4.05$ ), and less likely to share it with the broader public ( $M = 2.86$ , all  $ps < .01$ ).

Table 1.  
Mean Scores for Willingness to Share Information Items by Target Audience.

Item:	Target Audience		
	...on a social media website like Facebook or Twitter?	...with an online store in order to serve you better?	...with a broader public?
	<i>M</i>	<i>M</i>	<i>M</i>
...your email address	3.26 <sub>a</sub>	4.05 <sub>b</sub>	2.86 <sub>c</sub>
...your high school grades	2.23 <sub>a</sub>	1.95 <sub>b</sub>	2.54 <sub>c</sub>
...your medical records	1.31 <sub>a</sub>	1.36 <sub>a</sub>	1.62 <sub>c</sub>
			Continued.

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Item: Would you share...	Target Audience		
	...on a social media website like Facebook or Twitter?	...with an online store in order to serve you better?	...with a broader public?
...your last year's tax return	1.19 <sub>a</sub>	1.25 <sub>a</sub>	1.45 <sub>c</sub>
...your gender	4.28 <sub>a</sub>	4.06 <sub>b</sub>	4.24 <sub>ab</sub>
...your education (where you went to school; degrees earned)	3.92 <sub>a</sub>	2.59 <sub>b</sub>	3.76 <sub>ac</sub>
...your ethnicity	3.82 <sub>a</sub>	3.32 <sub>b</sub>	3.97 <sub>ac</sub>
...your current location	2.44 <sub>ab</sub>	2.48 <sub>a</sub>	2.21 <sub>b</sub>
...your address	1.54 <sub>a</sub>	3.38 <sub>b</sub>	1.67 <sub>c</sub>
...your bank account balance	1.15 <sub>a</sub>	1.36 <sub>b</sub>	1.27 <sub>bc</sub>
...your credit card information	1.16 <sub>a</sub>	3.09 <sub>b</sub>	1.18 <sub>ac</sub>
...your phone number	2.07 <sub>a</sub>	3.20 <sub>b</sub>	2.00 <sub>ac</sub>
...your marital status	3.97 <sub>a</sub>	2.61 <sub>b</sub>	3.66 <sub>c</sub>
...your date of birth	3.85 <sub>a</sub>	3.00 <sub>b</sub>	3.19 <sub>bc</sub>
...a photo of your driver's license	1.39	1.39	1.50
...the name of the city or town where you were born	3.73 <sub>a</sub>	2.64 <sub>b</sub>	3.16 <sub>c</sub>
...the name of your high school	3.98 <sub>a</sub>	2.19 <sub>b</sub>	3.34 <sub>c</sub>
...your name	4.35 <sub>a</sub>	4.06 <sub>b</sub>	3.95 <sub>bc</sub>
...the kind of car you drive	3.05 <sub>a</sub>	2.10 <sub>b</sub>	2.96 <sub>ac</sub>
...your mother's maiden name	2.11 <sub>a</sub>	1.75 <sub>b</sub>	2.10 <sub>ac</sub>
...your blood type	1.68 <sub>a</sub>	1.59 <sub>a</sub>	2.00 <sub>b</sub>
...the name of your first pet	3.04 <sub>a</sub>	2.15 <sub>b</sub>	3.02 <sub>ac</sub>
...your photo	4.25 <sub>a</sub>	1.89 <sub>b</sub>	3.13 <sub>c</sub>
...your thumbprint	1.21	1.28	1.22

*Note.* Items were rated on a scale from 1-5 (1 = *Extremely unlikely*; 2 = *Unlikely*; 3 = *Neutral*; 4 = *Likely*; 5 = *Extremely likely*). Means with different subscripts differ at the  $p = .01$  level.

Overall, participants were most comfortable sharing information on social media ( $M = 2.71$ ), as opposed to the general public ( $M = 2.58$ ), or with an online store ( $M = 2.45$ , all  $ps < .001$ ). The items in Table 1, however, indicate the nuanced differences by target group. For example, participants indicated they were more likely to share their home address with an online store, than they were with the general public or on social media. Similarly, they were also more likely to offer their credit card information to an online store but were unlikely to do so with the general public or on social media. Thus, disclosing information was affected by the sensitivity of the information, and the context (social media, online store, general public) in which it was to be released.

### 3.1. Hierarchical regression analyses

Three hierarchical regression analyses were conducted predicting: willingness to share personal information on social media; willingness to share personal information with an online store; and willingness to share personal information with the broader public. For each of these criterion variables, age and gender were entered on the first step to control for their effects. The five personality factors of Negative Emotionality, Extraversion, Open-Mindedness, Agreeableness, and Conscientiousness were added on the second step. Finally, purchase benefits, risk beliefs, internet trust, and media exposure were added on the third step. For each of these hierarchical regression analyses, Tolerance and VIF were within acceptable levels.

**Willingness to share personal information on social media.** The overall model was statistically significant and accounted for 25% of the variance on the measure of willingness to share personal information on social media ( $F_{(11,185)} = 5.66, p < .001$ , multiple  $R = .50$ ). Age and gender were not statistically significant predictors, but the personality scores produced a statistically significant change in the model ( $R^2$  change = .07,  $F_{inc(5,189)} = 2.76, p = .02$ ). Significant predictors were Extraversion ( $\beta = .20$ ), Agreeableness ( $\beta = .21$ ), and Negative Emotionality ( $\beta = .21$ ). The variables entered on the last step of the model also produced a statistically significant change ( $R^2$  change = .16,  $F_{inc(4,185)} = 9.81, p < .001$ ). Significant predictors were purchase benefits ( $\beta = .17$ ), and media exposure ( $\beta = .31$ ). The adjusted  $R^2$  value of .21 in the overall model indicates that 21% of the variability in the willingness to share personal information on social media was predicted by higher scores on Extraversion, Agreeableness, Negative Emotionality, purchase benefits and media exposure.

**Willingness to share personal information with an online store.** The overall model was statistically significant and accounted for 16% of the variance on the measure of willingness to share personal information with an online store ( $F_{(11,186)} = 3.17, p = .001$ , multiple  $R = .40$ ). Age and gender were not statistically significant predictors, but the personality scores were ( $R^2$  change = .07,  $F_{inc(5,190)} = 2.89, p = .015$ ). Significant predictors were Extraversion ( $\beta = .20$ ), and Conscientiousness ( $\beta = -.19$ ). The last step of the model also produced a statistically significant change ( $R^2$  change = .08,  $F_{inc(4,186)} = 4.58, p = .001$ ). The only significant predictor at this step was media exposure ( $\beta = .22$ ). The adjusted  $R^2$  value of .11 in the overall model indicates that 11% of the variability in the willingness to share personal information with an online store was predicted by higher scores on Extraversion and media exposure, and lower scores on Conscientiousness.

**Willingness to share personal information with a broader public.** The overall model was statistically significant and accounted for 12% of the variance in willingness to share personal information with a broader public ( $F_{(11,186)} = 2.29, p = .012$ , multiple  $R = .35$ ). Age, gender, and personality were not statistically significant predictors. The last step of the model produced a statistically significant change ( $R^2$  change = .05,  $F_{inc(4,186)} = 2.57$ ,

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$p = .039$ ). The only significant predictor was media exposure ( $\beta = .16$ ). The adjusted  $R^2$  value of .07 in the overall model indicates that only 7% of the variability in the willingness to share personal information with a broader public was predicted by higher scores on media exposure.

#### 4. DISCUSSION

This study examined factors that influence an individual's choice to share personal information online. Specifically, the role of personality, media exposure, internet trust, and perceived risks and benefits were examined in relation to a willingness to share personal information that differed in sensitivity (high school grades, medical records, bank account balance) and differed in target audience (social media, online store, general public). The results supported prior research that found sensitivity of the information and context played a role (Craciun, 2018). In terms of sensitivity, more sensitive information (such as bank account balances, tax returns, and blood type) was unlikely to be shared in any context. Thus, participants were attentive to, and discriminating amongst, the type of information shared. Overall, participants were more willing to share personal information on social media than they were with the general public or an online store. However, the type of information they would share depended on the circumstance. For example, participants indicated they were more likely to share their home address with an online store, than they were with the general public or on social media. Presumably, providing this information is necessary so the purchased item can be delivered to the correct address. Similarly, they were also more likely to offer their credit card information to an online store but were unlikely to do so with the general public or on social media. Again, credit card information in this context is necessary to make the purchase. Thus, information was disclosed that necessitated the transaction with an online store.

Personality also predicted willingness to disclose personal information, but again, it was context dependent. On social media, individuals high in agreeableness, negative emotionality, and extraversion were more willing to disclose. Individuals high on agreeableness are trusting and straightforward (Costa & McCrae, 1992). This trusting nature may make them less wary of their personal information falling into the wrong hands. Individuals high in negative emotionality can be impulsive (Costa & McCrae, 1992). This impulsiveness may lead them to offer information before they have had time to reflect on the consequences. Extraverts are outgoing, lively, seek excitement and are assertive (Costa & McCrae, 1992). Their gregarious nature makes them comfortable around others, so they may be more willing to share information. Higher scores on extraversion and lower scores on conscientiousness also predicted willingness to share personal information with an online store. Individuals who score low on conscientiousness generally do not pay attention to detail and are not very methodical (Costa & McCrae, 1992). In sum, personality traits predicted willingness to share information on social media and an online store. Personality traits did not predict willingness to share personal information with the general public, in which individuals may be completely unknown.

Purchase benefits predicted willingness to share information on social media, but not with an online store. This result appears counterintuitive. However, Kim and Kim (2018) also found that willingness to disclose personal information was influenced more by risks, than by the benefits. The larger the perceived risk, the less likely people would disclose (Myerscough, Lowe, & Alpert, 2006). However, risk was not predictive of disclosure in the current study, nor was internet trust. Risks, benefits, and trust were added in the hierarchical regression after the personality traits were entered, so they may not be

contributing anything additional to the model once personality has been taken into account. Although people understood there were risks involved, they felt these risks were slight. They only slightly disagreed when asked if the internet could be trusted and were neutral with respect to purchase benefits.

Willingness to disclose personal information was predicted by total media exposure in all contexts. The more people used the internet, the more comfortable they were sharing information. This experience may serve to lessen their concerns about privacy and risks – as people use the internet more frequently without any negative instances, the more comfortable they may become over time.

There were a number of limitations with this study. First, age and gender did not predict willingness to share personal information in this study. However, the sample was relatively young and mostly women, so this conclusion should be interpreted with caution. Future studies should be conducted on a more balanced gender distribution. As well, although the age range was 19-54 years in this study, most participants were young; therefore, replication with a wider age range and older sample is warranted to examine age differences.

Another limitation of the study is one inherent with the use of surveys. Questions on surveys may be prone to social desirable responding. Furthermore, this study was conducted online, and those individuals who chose to participate may have been more comfortable with internet use.

More research is needed to address further why people would provide sensitive information to others in cases where it is not necessary. People with more media exposure were more willing to disclose. Personality traits also predicted willingness to share personal information on social media and an online store. In both these cases, extraverts were more willing to disclose. As well, people higher in agreeableness and negative emotionality were more likely to disclose on social media, and people low on conscientiousness were more likely to disclose to an online store. Future research should examine personality traits in relation to actual behavior. The current study was a survey that asked participants how willing they were to share personal information but did not study actual behaviour. Given what we know about the privacy paradox (Brown, 2001; Norberg et al., 2007), it is likely people may disclose more information than they realize. Therefore, future studies should focus on both participants' written responses and actual behaviour.

Future research should examine online privacy in light of human interaction with artificial intelligence (AI).<sup>1</sup> There has been an exponential increase in research in this area (Tran et al., 2019a). The current study examined factors internal to the individual, yet online exposure increases the likelihood of personal data being mined by AI often without the knowledge or consent of the individual. As such, people may be influenced by manipulative algorithms that target their behaviour (e.g., online advertisements). Indeed, embodied conversational agents (virtual characters or avatars) communicate with users in online applied mental health settings (Provoost, Lau, Ruwaard, & Riper, 2017). AI can take large data bases (such as electronic health records) and use natural language processing to decipher written notes (Graham et al., 2019). Machine learning algorithms have been used to analyze social media posts to predict mental health outcomes (Kim, Lee, & Park, 2021). "Deep learning" can examine social media posts to look for markers of mental illness like depression (Kim, Lee, Park, & Han, 2020). While this use can have practical implications for someone in distress (Graham, et al., 2019; Tran et al., 2019b) it may be prudent to proceed cautiously given cybercrime is on the rise and the information may fall into the

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<sup>1</sup> I would like to thank an anonymous reviewer for the ideas and suggestions in this section.

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wrong hands. In a bibliometric study of AI in the field of health and medicine, Tran et al. (2019a) analyzed over 20,000 articles, and only 0.7% contained the word “ethics” in their keywords and text analysis. Thus, more studies on privacy and the interaction of humans with AI is warranted.

## 5. CONCLUSION

This study highlighted the role personality traits and media exposure played in participants’ willingness to share information, and adds to the body of literature on the paradox effect (Brown, 2001; Norberg et al., 2007). Overall, people with higher scores on media exposure were more willing to share information on social media, with an online store, and with the general public. The personality traits of extraversion, agreeableness, and negative emotionality, along with perceived purchase benefits predicted willingness to share information on social media. Higher extraversion and lower conscientiousness scores predicted willingness to share personal information with an online store. However, highly sensitive information (e.g., bank account balance) was unlikely to be shared in any context. Participants were more willing to share personal information on social media than they were with the general public or an online store. Nevertheless, participants weren’t too concerned about the risks involved in sharing information. In light of cybercrime, further research on sharing personal data and the paradox effect is warranted.

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## Chapter #6

# THE EFFECTIVENESS OF POSITIVE PSYCHOLOGY INTERVENTIONS IN FACILITATING THE READINESS FOR ORGANIZATIONAL CHANGE

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### ABSTRACT

The emerging interest in utilizing positive psychology in an organizational environment has increased attention to its potential in supporting both managers and employees in coping with organizational change. However, the field still lacks a holistic overview of the role of positive psychology interventions in enhancing the readiness for change among employees. The present paper focuses on the literature review of recent researches in resistance and readiness for change, personal resources impact, and positive psychology interventions as interrelated constructs. The potential directions for future studies have been discussed, as well as specific recommendations regarding how to enhance the research on the effectiveness of positive psychology intervention in facilitation of organizational change.

*Keywords:* positive psychology interventions, resistance and readiness for organizational change, PsyCap, psychological flexibility, appreciative inquiry, gratitude.

### 1. INTRODUCTION

Positive psychology has become increasingly dominant in an organizational environment in recent years. It has been noticed that positive psychology interventions provide many benefits for organizational development, increasing job satisfaction and commitment among employees. Specifically, companies are concerned with establishing an appropriate climate at work and providing appropriate support in coping with organizational changes for employees. However, the positive practices in the organizational field usually have been neglected and placed in the scope of researchers' attention just recently (Peterson & Seligman, 2003).

The recent interest in positive psychology intervention in the organizational field increased the number of researches and publications in the mentioned area. Some recent studies (Berson, Oreg, & Dvir, 2008) highlighted that readiness for organizational change is influenced by job satisfaction, job enrichment (Luna-Arocas & Camps, 2008), employees' attitudes (Thompson & Prottas, 2006), and affective commitment (Panaccio & Vandenberghe, 2009). However, there has been no integrated synthesis of such findings with actionable management implications and interventions for multiple such constructs.

Although, the research on the organizational change is represented widely in recent literature, a more holistic approach is required to understand the nature of organizational change and discover the opportunities for its facilitation. Therefore, this paper aims to gather, analyze and synthesize available studies to establish the deeper understanding of interrelations between organizational change, personal potential and positive psychology interventions. The present chapter seeks to begin remedying this gap.

The semi-systematic review was conducted to address the main goal of this chapter. A content analysis was applied to identify, analyze, and report patterns in the form of themes and findings within analyzed sources (Braun & Clarke, 2006). Therefore, the main contribution could be stated as the ability to map a field of research, synthesize the state of knowledge, and create an agenda for further research (Ward, House, & Hamer, 2009). The main strength of the used methodology is that this review was designed for topics that have been conceptualized differently and studied by various groups of researchers within diverse disciplines. However, the current study can be reinforced with appliance of more qualitative approaches, for example meta-analysis (Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004). The future research will focus on comparison between different types of studies on positive psychology interventions enhancing readiness for organizational change. The particular directions for future research have been indicated in part 3.

## **2. BACKGROUND**

### **2.1. Organizational change: Models and factors facilitating readiness for change**

#### **2.1.1. Resistance and readiness for organizational change**

Recently, organizations faced various transformations to adjust their functioning to changeable life conditions. As a result, organizations became more complex structures which require effective managing organizational change among workers (Pettigrew, Woodman, & Cameron, 2001). The resistance to organizational change can be viewed as one of the significant obstacles to successful accomplishing of different types of organizational change (Avey, Wernsing, & Luthans, 2008).

Traditionally, resistance and readiness for a change were studied in dialectical approach when both concepts are defined as opposite to each other. The reason for establishing this approach is the nature of organizational change which is described as a multileveled construct (Weiner, 2009). In recent literature, resistance and readiness for change is viewed as different concepts (Holt, Armenakis, Harris, & Feild, 2007). Furthermore, Self and Schraeder (2009) stated that there are three following domains which can trigger resistance to organizational change: individual factors, organizational factors and change-specific factors.

The significant research question focuses on the impact of the nature of organizational change on the resistance to this change among employees. Recent studies suggested the following factors that influence the attitudes and employees' resistance to change: the communication of change, the level of understanding of change, the consistency of the management actions with the objectives of the change initiative, and the participation in the change process (Erwin & Garman, 2010).

#### **2.1.2. Job satisfaction as an organizational factor facilitating employees' readiness for change**

An increase in job satisfaction is considered as a powerful tool in facilitating the readiness for organizational change. Based on studies, it has been stated that organizational culture, climate dimensions and policies are significantly related to employees' job satisfaction (Berson, Oreg, & Dvir, 2008). It has been shown that salary and job enrichment (Luna-Arocas & Camps, 2008), work-family balance strategies (Baltes, Clark, & Chakrabarti, 2010) as well as employees' attitudes such as perceived control (Thompson

& Prottas, 2006) and affective commitment (Panaccio & Vandenberghe, 2009) are positively correlated with job satisfaction.

The other set of significant variables influencing job satisfaction is related to employees' attitudes towards change (e.g. feelings and intentions towards change, evaluation of the costs and benefits related to organizational change) (Oreg, 2006), to employee engagement (Marks, 2006), and their problem-solving style (Amiot, Terry, Jimmieson, & Callan, 2006).

Research on leadership impact at a job satisfaction shows controversial results. It has been stated that satisfaction with supervisors has a positive impact on the job satisfaction (Mardanov, Heischmidt, & Henson, 2008). However, according to Avolio and colleagues (2009), the leadership is a complex construct which includes various aspects such as supervisors, followers, work context, culture, and the leader itself. The recent data considers a servant leader to provide a higher level of trust in an organization (Joseph & Winston, 2005), while transformational leadership increases job satisfaction (Liu, Shiu, & Shi, 2010), psychological well-being (Nielsen, Randall, Yarker, & Brenner, 2008), and social support perceptions (Lyons & Schneider, 2009).

### **2.1.3. Perceived organizational support and employees' readiness for change**

According to Luthans, Norman, Avolio, and Avey (2008), perceived organizational support enhances employees' positive psychological capital (PsyCap) and consequently higher readiness for change. Experiencing organizational support establishes a hope, and sets goals which will help to accomplish organizational tasks and accomplishments. Additionally, a supportive organizational climate may reinforce employees' resilience (Luthans et al., 2008) and optimism (Bakker & Schaufeli, 2008).

Perceived organizational support facilitates the readiness for organizational change if employees view it as legitimate and rational (Self, Armenakis, & Schraeder, 2007). According to recent studies, readiness for change is reflected in employees' attitudes, beliefs, and intentions related to the implementation of the change and the organization's ability to execute organizational change successfully (French, Bell, & Zawadzki, 2004). According to Eby, Adams, Russell, and Gaby (2000) perceived organizational support and readiness for change are interrelated, stating that the increase in organizational support enhances readiness for change (Madsen, Miller, & John, 2005). Consequently, interaction and social support are viewed as strong and positive components of the organizational culture, which can facilitate readiness for change.

Perceived supervisor's support is when employees believe that their organization appreciates their contribution and values their well-being, which results in an employee's commitment to the organization. Perceived supervisor support has an impact on positive emotions, psychological hardiness, (Cole, Bruch, & Vogel, 2006), job performance (Kuvaas & Dysvik, 2010) and job retention (Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002).

### **2.1.4. Social factors facilitating employees' readiness for change**

Recently, organizations pay attention to establishing and supporting positive relationships among employees by forming workgroups (Lewis, 2011), encouraging 'dream teams' through role clarity, diversity, advancement potential, supportive leadership, collective efficacy, and trust (Richardson & West, 2010). Establishing 'dream teams' results in enhanced creativity and innovation (Richardson & West, 2010; Shubina & Kulakli, 2020), increased work performance (Losada & Heaphy, 2004), engagement (Weigl et al., 2010), and job satisfaction (Mickan & Rodger, 2005). Recent studies have

stated that optimism, team efficacy, and resilience contributed to positive relationships at work overtime.

It has been stated that leaders have a power in promoting positive relationships between employees through modeling and the contagion effect (Hatfield, Cacioppo, & Rapson, 1994), via emphasizing the ethical practices and moral identity within organizations (Cameron, 2008). According to a positive approach to leadership, realistic optimism, intelligence, confidence, and hope help to manage subordinates and inspire them more efficiently (Luthans, Luthans, Hodgetts, & Luthans, 2001) and as a result help to increase job satisfaction and organizational commitment among employees (Kim & Brymer, 2011).

## **2.2. Positive psychology interventions and facilitating readiness for organizational change**

Applying positive psychology at the workplace has grown extremely fast within the last two decades, offering organizations effective strategies and tools directed towards managing organizational change and maintaining high well-being among employees'. However, not much details were discovered regarding the mechanism that constitutes positive psychology interventions at these levels.

Analysis of existing models related to the predictors of work engagement, performance and overall well-being provides three categories of drivers including personal resources, organizational resources and job experience. Personal resources are mainly related to the psychological capital, cognitive flexibility, self-confidence, emotional intelligence, resilience, and time use. Organizational resources include establishing a climate of trust, providing managerial support, social interaction and friendly environmental conditions. Among factors related to job experience, it is possible to mention autonomy, variety, mastery, structure and relationships (Boniwell & Tunario, 2019).

In accordance with a study conducted by Prochaska, Redding, and Evers (1997), the self-efficacy of employees is an essential condition for successfully accomplishing an organizational change. Moreover, employees with positive emotions, higher self-efficacy, and optimism, will gain more confidence to overcome the obstacles and challenge related to the organizational change (French et al., 2004; Luthans et al., 2008) and will experience a decrease of anxiety and resistance about organizational change (Cummings and Worley, 2009).

Among the most significant benefits of having happy workers, the following should be mentioned: setting more challenging tasks, reaching goals faster, producing more creative ideas, better interactions with colleagues, providing more support and help, learning more, getting promoted faster. Happy workers would more focus on promotion goals vs avoidant goals, they are more cooperative in negotiations, and search for more concessions, more efficient solutions and results in lower deviance at work (Boniwell & Tunariu, 2019). Consequently, modern organizations more often focus on well-being as a strategic goal of implementing an organizational change, increasing employees' performance and engagement.

Self-efficacy can be developed through mastery experiences of performance attainments, vicarious positive experiences or modelling, positively oriented persuasion, and/or physiological and psychological arousal. According to Bandura (Boniwell & Tunariu, 2019), cognitive mastery modelling, and self-regulatory competences are the effective strategies enhancing self-efficacy (Shubina, 2018). Workers with higher levels of self-efficacy will be able to set more challenging goals, put more effort to accomplishing

their goals and manage obstacles, and facilitate productive teamwork and collective efficacy of teams.

It is possible to facilitate resilience at an organizational level. Proactive training provides workers with necessary resources to deal with challenges or obstacles when they occur. Sutcliffe and Vogus (2003) established strategies to enhance resilience at the individual, group, and organizational levels. They allow workers' to enhance competence and efficacy through increasing their access to personal and external resources, improving their learning attitude, and organizing their experiences.

Appreciative inquiry is an essential element in organizational development (Cooperrider & Sekerka, 2003) which approaches organizational change through tends to focus on individual's strengths, and organizations attitude towards change. Appreciation inquiry focus on organizational struggles and identifying the positive behavioral and strategic examples of organizational practice afterwards enhancing and promoting these practices. A study by Fry, Barrett, Seiling, and Whitney (2001) has found that appreciation inquiry facilitates employee's engagement and helps them effectively managing with the corporate changes.

Gratitude is considered as one of five qualities of mindfulness, which reduces the feeling of anxiety amongst workers experiencing employment uncertainty (Jacobs & Blustein, 2008). It decreases stress (Wood, Maltby, Gillett, Linley, & Joseph, 2008), raises the feeling of responsibility towards society and their colleagues (Andersson, Giacalone, & Jurkiewicz, 2007), and enhances social relationships and increases their subjective well-being (Seligman, Steen, Park, & Peterson, 2005).

According to study by Kaplan and Kaiser (2010) positive leadership training is significantly positive psychology interventions (PPI) enhancing the increase of awareness among leaders about their own strengths without relating them to possible improvements of their weaknesses or deficits. Supervisors can improve employees' PsyCap through effective interventions (Mills, 2010), including a web-based training program (Luthans, Avey, & Patera, 2008) instructing employees on the PsyCap components and asking them to report where they had witnessed such constructs in their own work lives.

Among examples of PPI at an organizational level the successful seem to be delivered bonuses, open for discussions climate, atmosphere of fairness, flexible work, and focus on outcomes, valuing exploration, growth opportunities, and effective socializing environment. All mentioned examples may enhance healthy relationships at work, and openness for a change (Boniwell & Tunario, 2019).

### **3. FUTURE RESEARCH DIRECTIONS**

While it is clear that much research has identified the effectiveness of positive psychology interventions in the organizational field, it is considered as an emerging area of study, with actual research needs to address. For example, more empirical research on the role of PsyCap and appreciation inquiry is necessary, as both have recently occurred in literature and are not widely utilized in practice. More specifically, research on how PPI may use PsyCap to increase its readiness for organizational change is under high demand. Due to the fact that the majority of studies are focused on some particular areas in using PPI in the organizational environment, the more complex study on how PPI would facilitate an organizational change on one hand, increasing awareness about personal potential and its relation to job satisfaction, employee performance and commitment, and on the other hand, improving organizational culture, environment, providing support and adjusting policies.

Longitudinal research must be useful in exploring PPI and its long-term effects on employees' readiness for organizational change and organizational support in this matter. The majority of research investigating various aspects of PPI utilizes self-reported survey data that limits the understanding of PPI effects and impacts on explored relevant outcomes. Thus, to gather more objective and reliable data self-reported surveys could be supported with surveys conducted by managers. Reports on how effective various strategies are at enhancing workers' well-being (e.g. setting more challenging tasks, producing more creative ideas, providing more support and help, getting promoted faster, enhancing resilience and gratitude, etc.) will help to overcome the mentioned above limitations.

To investigate characteristics of PPI it is important to focus on its effects as complex and successful approach. Furthermore, increased research attention needs to be given towards personal resources, positive constructs, and effective interventions targeting these constructs on an employee and manager level. Finally, to keep objectivity and follow a holistic approach research on effectiveness of PPI should comprehensively study both positive and negative aspects of the employee and organizational functioning. Consequently, for more exploration and more applicable results, research on effectiveness of PPI must follow a wider angle of consideration of framed constructs.

Negativity is an essential requirement to gain some particular positive outcomes. For example, to experience resilience, both employees and organizations should go through certain negative circumstances. In addition, to be able to increase employees' readiness for organizational change, detailed information regarding resistance for change seems to be essential for its overcoming. Therefore, exploring of the negative circumstances' impacts and how they integrate with PPI would increase understanding of PPI and the interactive effects of positive and negative organizational behavior and circumstances in relation to one another.

#### **4. CONCLUSION**

In sum, many employees and organizations are struggling in today's social and economic environment. Therefore, fostering organizational change by PPI may be the essential point that each can apply to increase the organizational success and employee adaptability to various changes. As explicated throughout this study, the available research has evidenced that when organizations take a positive approach to their corporate culture and their employees, the organizational development ultimately benefits. Recent research has found that using strengths and personal resources increases engagement and enjoyment. As such, companies and corporations with their management would be efficient if they will consider the constructs and applications discussed in this paper as well as will implement such positive interventions and initiatives within their own organizational environment and structure. Interventions facilitating resilience, enhancing self-efficacy, reinforcement of an individual's strengths, enhancing social interactions will result in a decrease of stress and maintain employees' well-being. Consequently, these PPI will support employees and management in facilitating readiness for organizational change through developing personal potential, increasing job satisfaction, commitment and performance among workers.

This semi-systematic review identified, analyzed, synthesized and reported the main findings on the effectiveness of PPI in relation with organizational change. The obtained results allow to extend the future analysis through comparison of different types of studies and findings on positive psychology intervention enhancing the readiness for organizational change.

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## Chapter #7

### THE PSYCHOLOGICAL IMPACT ON RUSSIAN SOCIETY IN THE CONTEXT OF THE COVID-19 PANDEMIC

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#### ABSTRACT

The problem of the psychological impact of a pandemic, quarantine and self-isolation on the state of society attracts increased attention of specialists. The objective of our work was to find the most common attitudes and types of responses of Russians to the epidemic COVID-19 taking into account their involvement in social networks, critical thinking and severity of psychopathological symptoms. The study was carried out during the recession of the first wave of the pandemic in early June 2020. The main tool was the questionnaire of T. Nestik in an abridged version. Additionally, a questionnaire of critical thinking was used (CTI, Epstein, adapted by Lebedev & Enikolopov, 2004); test of psychopathological symptoms SCL-90-R; social media engagement questionnaire (Karadag, 2015) were used. The study involved 986 people (56.9% male, 43.1% female) aged 18 to 76 years. Using exploratory factor analysis, 6 types of responses to the epidemic situation caused by COVID-19 were identified (fans / opponents of the "conspiracy theory"; responsible / irresponsible, covid-dissidents, covid-optimists, misophobes, anti-vaccinators). The low level of trust in society and, above all, in medicine, harms the process of mass vaccination. Against the background of infodemic, social trust is declining and the psychological status of citizens is deteriorating.

*Keywords:* COVID-19, attitude towards the pandemic, psychological impact of society, Russian society, typology.

#### 1. INTRODUCTION

The problem of the psychological impact of a pandemic, quarantine and self-isolation on the state of society attracts increased attention of specialists. The works of scientists from China, Italy, Japan, Spain, France and other countries published since December 2019 analyze the impact of the pandemic on the emotions and behavior of people, the first reaction to challenges and a reformatted way of life during the outbreak of the pandemic (see: Deyneka & Maksimenko, 2020). Negative psychological reactions of people to threats to health, life, well-being and stability in society have been exacerbated by "infodemic" - a little-studied phenomenon that critically affects the minds of people, changing the way people consume information and, as a result, people's behavior, reducing the effectiveness of measures taken by governments against spread of infection. Social media platforms (Facebook, V Kontakte, Odnoklassniki, Youtube, Instagram and Twitter) provide unprecedented numbers of users with direct access to uncontrolled content, which amplifies rumors and the spread of questionable, including fake information. For example, an international team of researchers (Depoux et al., 2020) drew attention to rumors and conspiracy theories about the origin of COVID-19, which circulated on social networks and spread faster than the epidemic itself, giving rise to racism, fear and compulsive buying,

including the purchase of protective masks, and also led to the killing of four Chinese people who had never been to China. In these actions, the authors saw infodemic as a viral form of spreading information about the epidemic, drawing attention to a quote from the speech of the WHO Director-General, Dr. Tedros, who stated that “fakes about coronavirus are more infectious than the virus itself” (WHO Director-General's..., 2020).

Polish scientists (Gruchola, & Slawek-Czochra, 2021), based on weekly reports from the Eurobarometer for the period March-July 2020, studied the public opinion of EU residents regarding the COVID-19 pandemic. The authors concluded that the lack of a sense of security among EU residents in three key areas (health, economy and social life) was not the result of their personal experience, but the impact of the media, which created a “culture of fear”. Fear caused by a severe clinical picture of the disease, a large number of deaths, restrictive measures, legal punishment, mistrust of officials who did not cope with the situation, and the overflow of the media space with inaccurate information also negatively affected the mental state of the US population, especially in Florida, Texas and Arizona (Farmer, 2020). When discussing the infodemic, Japanese researchers Jinling Hua and Rajib Shaw recall at the beginning of their paper the tragedy of 2011, when a similar "invisible catastrophe" related to radiation and caused by a tsunami and an earthquake occurred. In their opinion, the difference between the situations of 2011 and 2020 is that radiation can be measured, while measuring infodemic is an urgent task facing modern researchers (Hua, & Shaw, 2020).

In addition to increasing anxiety and tension among people, against the background of the pandemic, an exacerbation of economic and environmental problems was also recorded, in particular, a decrease in confidence in the future (Jia et al., 2021), panic buying behavior (Naeem, Ozuem, 2021). At the same time, some studies have identified not only negative but also positive effects of communication on social networks (Liu et al., 2021; Mohamad, 2020; Jia et al., 2021) and changes in society in response to the pandemic. Researchers found that group threats (such as natural disasters and epidemic diseases) identified group interests, leading to increased social solidarity (Liu et al., 2021). According to Japanese authors, the deep commitment of the Chinese people to collective action (Hua, & Shaw, 2020), facilitated by social networks, made it possible to achieve exceptional coverage of the Chinese population with a mindset to comply with disease containment measures.

The need for monitoring of the psychological status of society against the background of the epidemiological situation is obvious.

## **2. BACKGROUND**

The results of empirical studies of the psychological status of Russian society and its adaptation to the pandemic caused by COVID-19 have been covered in scientific and journalistic literature since March 2020. For example, E.V. Fedoseenko (2020) results of a study of human psychological resources during the period of forced isolation. The most common reactions of respondents (N = 784 people) to the epidemic situation are highlighted. Fear (47.3%), apathy (22.2%), stupor (14.5%) formed the three most common responses to forced isolation. Also, such psychological "effects" of epidemics and related quarantines as anger, irritation, depression, emotional exhaustion, symptoms of post-traumatic stress were recorded. The author has characterized the epidemic situation as an emergency due to the “psychological effects” that it provokes.

S. N. Enikolopov and his colleagues (2020), having interviewed 430 people at the end of March 2020 using a battery of questionnaires, obtained evidence of an increase in the number of people who view the pandemic as a result of the use of biological weapons, punishment for sins, and retribution for neglect of environmental problems. The respondents

showed a statistically significant increase in depression; sleep worsened; the level of anxiety, fear and panic increased. At the same time, it was noted that Russians turned to religion, the level of constructive thinking and emotional coping fell.

T. A. Nestik (2020) identified 4 types of responses encountered by citizens during an epidemic. The highest level of stress was experienced by “skeptics” (20%), who had a low level of trust in state authorities and official information and consider the threat of a pandemic to be exaggerated. “Alarmists” (30%) showed the greatest concern about the pandemic, believing that everything is much worse than it was broadcasted in the official media, and that more stringent regulatory measures should have been taken in society. “Fatalists” (25%) were convinced that little depends on people and assessed the prospects very pessimistically, developing conspiracy theories on social networks. And finally, “optimists” (25%) considered the threat to be serious but showed more inclination to empathize with others, more faith in their own strengths and in the efforts of the state.

The aim of the study was to diagnose the psychological status of Russians against the background of the period of recession of the conditionally first or spring wave of a pandemic. For this, a comprehensive study of the everyday consciousness, psychological states and characteristics of the respondents was carried out.

The following tasks were set:

- 1) find the most common views and types of responses of Russians to the COVID-19 pandemic and infodemic;
- 2) measure some indicators of mental health in society;
- 3) investigate the degree of trust in society;
- 4) test the link between social media involvement and mistrust of government and citizens in a pandemic, between social media involvement and belief in conspiracy theories of a pandemic,
- 5) identify demographic differences in attitudes to the pandemic.

The main hypothesis of the study was that against the background of the pandemic and infodemic caused by COVID-19, there will be a high level of panic, anxiety, search for an enemy, and distrust in society. In addition, it was suggested that those who are more involved in communication through social networks will experience panic and distrust to the country's leadership and fellow citizens to a greater extent.

The study was part of the monitoring of the psychological status of Russians in different periods of the pandemic and may be useful for further comparative studies of the dynamics of the impact of new waves of the pandemic on Russians.

### **3. METHOD**

#### **3.1. Organization of research, sample**

In this study, data were collected through the Toloka.Yandex.ru service for two weeks (from May 31 to June 10, 2020 with the highest number of responses on June 2 and 9). Since the study was conducted during the recession of the first wave of the COVID-19 pandemic, expectations were associated with the accumulation of some experience in adapting to the epidemiological situation in Russia.

The study involved 986 people (56.9% males, 43.1% females) aged 18 to 76 years ( $M = 36.63$ ;  $SD = 10.2$ ). The survey geography covered various regions of Russia. The average income across the entire sample is between low and medium

### 3.2. Instruments

The main research tool was a shortcut version of the questionnaire developed by T. Nestik to measure attitudes to the pandemic and assess trust in representatives of various social groups (Nestik, 2020). Since the Nestik questionnaire was modified and shortened by the authors of this paper, it was necessary to conduct an exploratory factor analysis to clarify its structural validity. The version used 34 included statements with a five-point Likert response scale. At the same time, by adding to the self-efficacy scales statements reflecting skepticism about the threat of coronavirus, a new scale of covid dissidence was formed (4 statements, a Cronbach = 0.731; M = 2.85; SD = 0.940; examples of statements: "The danger of epidemics like COVID-19 is clearly exaggerated"; "It makes no sense to wear a mask or sit at home - if you are destined to get sick, then this cannot be avoided").

To study mental health indicators in the context of the recession of the first wave of the pandemic (task 2), the same tools were used as in the work of clinical psychologists in March 2020 (Enikolopov et al., 2020), namely the symptomatic method SCL-90-R, the constructive thinking inventory (CTI).

Symptom Check List-90-Revised (Derogatis, & Savitz, 2000) is a clinical test and screening technique designed to assess patterns of psychological signs in psychiatric patients and healthy individuals. The SCL-90-R symptomatic questionnaire contains a number of scales, including: depression, anxiety, hostility, as well as an index of the severity of existing distress and the number of symptoms disturbing the patient.

Since in a difficult critical situation of a pandemic, the requirements for adaptive and constructive thinking increase, the Constructive Thinking Inventory was used (CTI, Epstein, Epstein, 2001 adapted by Lebedev & Enikolopov), which was confirmed to be valid and reliable and fully standardized (Lebedev & Enikolopov, 2004). This technique is based on Epstein's theory that constructive thinking is associated with resistance to stress and is defined as "automatic thinking that facilitates solving problems in life in accordance with the principle of achieving maximum results with minimum costs". Violation of constructive thinking leads to the automation of daily activities, however the subject increases the risk of stress. Those with a high score on the General Criticality of Thinking scale tend to think divergently and adapt to the demands of the situation. With the degree of development of critical thinking, the tendency to emotional and behavioral copings increase, and the tendency to naive optimism, as well as esoteric, categorical and personal-superstitious thinking decreases (Epstein, 2001).

To study the involvement in social network communications, a questionnaire "Social Media Addiction Scale" by Indian authors was used (Karadag et al, 2015), translated into Russian and adapted by Deyneka and Maksimenko (2020). It includes 10 statements with a 5-point scale of answers. The reliability of the questionnaire was confirmed by the Cronbach alpha coefficient 0.864. An example of statement: "I prefer using social media rather than watching TV".

The demographic reference also included information about the level of education, the degree of religiosity, the subjective level of income (5-point scale by Ad. Furnham: 0 - making ends meet, 1 - low, 2 - medium, 3 - high, 4 - very high).

Data processing included exploratory factor analysis with Varimax rotation and Kaiser normalization, and correlation analysis using Spearman's coefficient. The calculation of descriptive statistics, correlation and factor analysis were performed using the statistical package SPSS 20.0.

#### 4. RESULTS

Factorization of the data from the pandemic attitudes questionnaire set eight factors (table 1) the last four of which are represented by low factor weights, but can be considered in the context of the general diversity of typical attitudes and perceptions that arose in response to the epidemic situation.

*Table 1.*  
*Factor structure and descriptive statistics of data from the pandemic attitudes questionnaire (N = 986).*

Assertions	Factor load	M (SD)
<b>The factor of conspiracy theories about coronavirus</b> (share of explainable variance 15.9%)		
1. Viruses like COVID-19 are created artificially for some purpose.	0,779	2,88 (1,27)
7. Epidemics are weapons used by some people against others.	0,726	2,65 (1,25)
4. Through epidemics, the rich regulate the number of the poor.	0,645	2,28 (1,23)
2. An outbreak of an epidemic is, as a rule, the result of someone's mistake.	0,485	3,24 (1,16)
6. The emergence of new infectious diseases is a natural process of mutation that occurs in nature without the participation of people.	-0,766	3,42 (1,17)
5. The emergence of new pathogens is pure chance.	-0,762	2,89 (1,15)
<b>The covid dissidence factor</b> (share of explainable variance 12.0%)		
19. The danger of epidemics like COVID-19 is clearly exaggerated.	0,738	3,03(1,22)
29. It is pointless to wear a mask or sit at home - if you are destined to get sick, then this cannot be avoided.	0,687	2,40 (1,32)
20. The media hype about COVID-19 is being used to divert public attention from more important issues.	0,657	3,20 (1,26)
21. Epidemics pose a threat only to people with poor health.	0,620	2,79 (1,25)
28. Flu shots can do more harm than good.	0,437	2,79 (1,27)
27. Vaccinations often cause side effects.	0,423	3,16 (1,21)
<b>Covid optimism factor</b> (share of explainable variance 8.1%)		
25. The leadership of our country is making sufficient efforts to contain the pandemic.	0,812	2,79 (1,28)
24. The level of development of medicine in Russia is sufficient to save most of the sick from the epidemic.	0,793	2,83 (1,24)
26. In the event of a global epidemic, doctors will be able to create the necessary medicine.	0,670	3,34 (1,03)

30. If I get sick during an epidemic, I can only rely on myself and my loved ones.	-0,488	3,33 (1,30)
<b>The factor of trust and responsibility in society</b> (share of explainable variance 6.3%)		
10. During an epidemic, information on the number of infected people will be deliberately distorted so as not to sow panic.	0,594	3,65 (1,08)
11. In the event of an epidemic, most people will not report that they are sick, so as not to be quarantined.	0,582	3,52 (1,05)
14. The only salvation from the epidemic is in the moral conscience and responsibility of everyone.	0,534	3,95 (1,07)
9. The cause of epidemics is low education and poor hygiene.	0,519	3,17 (1,27)
12. Most Russians will not believe the official information about the number of cases and deaths during the epidemic.	0,516	3,68 (1,03)
<b>Fear factor of infection and misophobia</b> (share of explainable variance 4.6%)		
33. I am afraid to come to the clinic in order not to get infected.	0,845	3,25 (1,35)
32. I am afraid to use public transport as it is easy to get infected there.	0,806	3,11 (1,35)
<b>The Factor of Anxiety, Repentance and Charity</b> (share of explainable variance 3.5%)		
22. I am very worried about the news about epidemiological threats.	0,661	2,95 (1,18)
23. I fear new and more dangerous epidemics.	0,605	3,25 (1,22)
31. I am ready to donate money to help the elderly who fell ill during the epidemic.	0,598	2,81 (1,15)
3. Epidemics are God's punishment.	0,533	1,68 (1,02)
<b>Predictive pessimism factor</b> (share of explainable variance 3.3%)		
17. It is likely that in the next 50 years there will be an epidemic that will kill all people.	0,661	2,27 (1,15)
18. In the next 20 years, epidemics like COVID-19 will repeat.	0,605	3,63 (0,92)
27. Vaccinations often cause side effects.	0,575	3,16 (1,21)
28. Flu shots can do more harm than good.	0,574	2,79 (1,27)
<b>Preference factor for strict restrictive measures</b> (share of explainable variance 3.0%)		
13. Violation of quarantine should be punished with prison terms.	0,771	2,08 (1,19)
15. It is necessary to disclose information about the history of movement and contacts of patients, even if this violates their right to privacy.	0,757	2,87 (1,36)
8. Only iron discipline can save society from a serious epidemic.	0,413	3,50 (1,23)

16. To prevent panic, it is necessary to suppress the dissemination of news that differs from official information and WHO recommendations.	0,392	3,06 (1,33)
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The first factor was named "*the factor of conspiracy theories about coronavirus*." This factor accounts for 15.9% of the explained variance. It contains the opposition of the idea of the causative agent of a pandemic as a man-made, artificially created by a certain "enemy", as a biological weapon, or, on the contrary, a natural, inartificial phenomenon.

The second factor "*covid-dissidence*" (12.0% of the variance) includes ignoring the danger of infection in combination with a fatalistic approach to the danger (probability) of getting sick. With fewer contributions, it included manifestations of a negative attitude towards vaccinations, which confirms the fact that among covid dissidents there are more of those who are called "anti-vaccines".

The third factor "*covid-optimism*" is formed by trust in the Governance against the backdrop of a pandemic, faith in domestic medicine and world science, and with the opposite sign (with a small factor load), the factor includes hope only for oneself and one's loved ones in case of infection.

The fourth factor "trust and responsibility in society" embodies the awareness of problems related to the responsibility or irresponsibility of members of society against the background of a pandemic and trust / distrust in the systems "citizen-state" and "citizen-society".

The fifth factor, called "*fear of infection and misophobia*", is formed by the fear of contracting the COVID-19 virus in public places (in transport or at a clinic reception) and refusal to visit them.

Against the background of a pandemic, the manifestations of misophobia (the desire to minimize the need to interact with strangers and avoid touching various things due to the fear of microbes) were provoked by an epidemic situation, i.e., we are talking about situational anxiety and cautious (sometimes excessive) behavior.

Fears, anxiety, panic moods in different forms are embodied in two more factors. Thus, in the sixth factor, or "*the factor of fear, repentance and charity*," the fear of new epidemiological threats and more dangerous epidemics in the future is combined with the interpretation of the pandemic as punishment for sins and a willingness to donate money to elderly people who fell ill during the epidemic.

The seventh factor "*predictive pessimism*" embodies doom, apocalyptic sentiments ("it is likely that in the next 50 years there will be an epidemic from which all people will die"), the expectation of new epidemic threats, doubts about the benefits and safety of vaccinations. The eighth factor "*preference for strict restrictive measures*" united the approval / disapproval of prison sentences for violation of quarantine, the requirement for transparency of movement and contacts of the sick, even to the detriment of privacy, regulation of the life of citizens with iron discipline to save from the epidemic.

Thus, the resulting factorial structure of the survey data, reflects the spectrum of rather diverse attitudes of the Russians' COVID-consciousness.

As the analysis of descriptive statistics shows (see Table 1), the prevailing belief among respondents is that the emergence of new infectious diseases is a natural process of mutation that occurs in nature without the participation of humans, or the result of someone's mistake. Conspiracy explanations for the emergence of a new infection, called COVID-19, were not popular among Russians in the first ten days of June 2020. The explanation of the pandemic as a punishment of the God turned out to be even less popular (M=1.68, SD=1.02).

The greatest degree of agreement among the Russians participating in the survey was received by the statements from the fourth factor, which reflects trust and responsibility in society. Most of the respondents agree with the opinion that the only salvation from the epidemic lies in the moral conscience and responsibility of everyone ( $M=3.95$ ,  $SD=1.07$ ). At the same time, citizens tend to distrust both official information about the number of infected with covid ( $M=3.68$ ,  $SD=1.03$ ) and information from fellow citizens who “will conceal the fact of infection with the virus” ( $M=3.52$ ,  $SD=1.05$ ).

In terms of severity, trust in world science, which will ensure the creation of a cure for an insidious virus, and trust only in oneself and in the inner circle of people in case of illness, turned out to be practically the same. It should be borne in mind that the study was carried out before the development of the Sputnik V vaccine.

Despite the statistically significant predominance with age of predictive anxiety about epidemiological threats ( $p<0.01$ ) and specifically recurrence of epidemics in the coming years ( $p<0.001$ ), as well as fears of side effects of vaccinations ( $p<0.01$ ), representatives of the older generation showed more confidence in the country's leadership in its efforts to contain the pandemic ( $p<0.001$ ). Confidence in the capabilities of medicine and science for saving the majority of patients also turned out to be higher with age ( $p<0.01$ ).

The data indirectly indicate a higher confidence in the World Health Organization, which manifested itself in less agreement ( $p<0.001$ ) with measures regulating the information flow (“in order to prevent panic, it is necessary to suppress the spread of news that differs from official information and WHO recommendations”).

In addition, the factor of age (which may indicate a greater maturity of the individual) manifested itself in greater confidence in fellow citizens in a pandemic situation. The older the respondents were, the less they showed agreement that “in the event of an epidemic, most people will not report that they are sick, so as not to be quarantined” ( $p<0.001$ ), that “most Russians will not believe the official information on the number of cases and deaths during a pandemic ( $p<0.01$ ). At the same time, among the older generation, there were more of those who believe that security is more important than the right to privacy (contacts and movements) ( $p<0.001$ ).

At the same time, the results of the study showed that the older the respondents were, the more among them were supporters of conspiracy and fatalistic theories of the origin of the pandemic (“viruses like COVID-19 are created artificially for some purpose” ( $p<0.001$ ), “Epidemics are God's punishment” ( $p<0.001$ ), “with the help of epidemics, the rich regulate the number of the poor” ( $p<0.01$ )). Accordingly, fewer were those who believed that the pandemic was caused by chance or a natural process of mutations ( $p<0.01$ ).

According to the data obtained, women believe more in conspiracy theories and more often agree that “viruses are created artificially for some purpose” ( $p<0.05$ ), as well as that “the outbreak is the result of someone else's mistake” ( $p<0.05$ ). There were more skeptics among men who agree that “during epidemics, information on the number of infected people will be deliberately distorted so as not to sow panic” ( $p<0.05$ ) and that “the media hype about COVID-19 is used to distract attention of society from more important problems” ( $p<0.05$ ). Men more often agreed that “pharmaceutical companies deliberately delay the release of certain drugs so that they will cost more in the future” ( $p<0.05$ ).

Women are more likely than men to show phobias, significantly more often agreeing that they are more afraid of new more dangerous epidemics ( $p<0.05$ ), and also more afraid to use public transport ( $p<0.05$ ) and come to an appointment at the clinic ( $p<0.05$ ), for fear to contact the virus. More educated respondents also more often demonstrated similar attitudes ( $p<0.01$ ). In addition, they mostly rely only on themselves and their loved ones ( $p<0.01$ ).

Religious respondents believe that the epidemic is God's punishment ( $r = 0.44$ ,  $p < 0.001$ ). Among them, there are more of those who believe that the rich regulate the number of the poor with the help of epidemics ( $r = 0.22$ ,  $p < 0.001$ ) and that epidemics are a weapon used by some people against others ( $r = 0.21$ ,  $p < 0.001$ ), and that viruses are created artificially ( $r = 0.17$ ,  $p < 0.001$ ). Among religious people, there were more supporters of harsh punishments for violating quarantine ( $r = 0.09$ ,  $p < 0.01$ ), advocating compliance with WHO recommendations ( $r = 0.10$ ,  $p < 0.01$ ). They give a higher rating to the efforts of the country's leadership to contain the pandemic ( $r = 0.21$ ,  $p < 0.001$ ), more trust in Russian medicine ( $r = 0.12$ ,  $p < 0.01$ ) and media statistics. At the same time, they are more afraid of vaccinations ( $r = -0.14$ ,  $p < 0.001$ ) and vaccinations ( $r = -0.15$ ,  $p < 0.001$ ) and adhere to a fatalistic view of the possibility of getting sick ( $r = 0.19$ ,  $p < 0.01$ ).

People with a high subjective income ( $r = 0.10$ ,  $p < 0.01$ ) and more religious people ( $r = 0.19$ ,  $p < 0.001$ ) are more inclined to show charity during a pandemic.

Correlation analysis of the data from the questionnaire of attitudes towards the pandemic and the questionnaire of the severity of psychopathological symptoms SCL-90-R showed that persons with high scores on the anxiety scale have higher fears about new and more dangerous epidemics ( $p < 0.001$ ) and expectations of negative news about epidemiological threats. The higher the indicators on the scale of depression and the scale of phobic anxiety, the higher the manifestations of misophobia ( $p < 0.001$ ), the less trust in people around and the more suspicions about their non-compliance with epidemiological rules ( $p < 0.001$ ). Individuals with high scores on the hostility scale advocate jail sentences for those who violate quarantine ( $p < 0.001$ ).

The average data on the critical thinking questionnaire (CTI) on all scales were located in the normative zone. Against the background of the loosening of the self-isolation regime in early June 2020, the manifestations of categorical and personal-superstitious thinking increased slightly.

Correlation analysis of the data from the pandemic and CTI questionnaire showed that news about epidemiological threats causes less anxiety in persons with high scores on the emotional coping scale ( $r = -0.237$ ,  $p < 0.001$ ) and the general constructive thinking scale (GCTI). The higher the GCTI scores, the lower the adherence to conspiracy theories of the origin of the pandemic, suspicion, distrust of people around and social institutions, fear of distant threats and manifestations of misophobia.

For the iron discipline against the background of the pandemic, persons with high indicators on the scales of emotional ( $r = 0.279$ ,  $p < 0.01$ ) and behavioral coping ( $r = 0.217$ ,  $p < 0.01$ ) spoke.

The carriers of esoteric thinking believe that epidemics are a weapon used by some people against others ( $r = 0.371$ ,  $p < 0.001$ ), and do not agree that the emergence of new infectious diseases is a natural process of mutation that occurs in nature without the participation of people ( $r = -0.260$ ,  $p < 0.001$ ). People with higher scores on the scales of categorical and personal-superstitious thinking turned out to have lower trust in the media and people around them.

The results of the correlation analysis show that among those who prefer social networks to official information (television, radio, print), there are statistically significantly more respondents characterized by low social and institutional trust. They have a more pronounced negative attitude towards the country's leadership, and they do not consider the efforts made by the authorities to contain the pandemic sufficient ( $r = -0.230$ ,  $p < 0.001$ ), do not believe in the possibilities of domestic medicine ( $r = -0.200$ ,  $p < 0.001$ ) and do not rely on themselves and their loved ones in a situation of illness ( $r = -0.190$ ,  $p < 0.001$ ).

In addition, among them there are more of those who not only do not trust official information about the epidemic situation ( $r=0.140$ ,  $p<0.001$ ), but also do not trust their fellow citizens, attributing to them possible facts of concealing information about the disease due to fear of being quarantined ( $r=0.130$ ,  $p<0.001$ ), and project their distrust of the official statistics on morbidity onto the majority of Russians ( $r=0.180$ ,  $p<0.001$ ).

## 5. FUTURE RESEARCH DIRECTIONS

Currently, the authors have carried out a comparative analysis of the research data during the 1st (spring) and 2nd waves of the pandemic in Russia in the fall of 2020 (827 people, 53.9% of men, 46.1% of women aged 18 to 75 years), paper is in press. In the fall of 2021, it is planned to repeat the study against the background of the 3d wave of the pandemic and find the reasons for the relatively low activity of citizens in the campaign of free vaccination.

## 6. CONCLUSION/DISCUSSION

The results of the study showed a spectrum of rather diverse attitudes of the Russians' covid consciousness (supporters / opponents of the "conspiracy theory"; responsible / irresponsible, covid-dissidents, covid-optimists, predictive pessimism, misophobes, anti-vaccinators).

Individuals with constructive critical thinking and emotional coping proved to be more adaptive in assessing the epidemic situation, connected with the COVID-19 pandemic.

Among religious people, there were more supporters of conspiracy theories about the origin of the virus and the COVID-19 pandemic. Despite the fact that among religious people there are more of those who trust the government, WHO, the media and domestic medicine, they are more often afraid of vaccinations and are prone to fatalism in relation to the threat of the disease.

The older generation shows more confidence in the institutions of power and the people around them against the backdrop of the pandemic which corresponds to the data of other authors (Pak, McBryde, & Adegbeye, 2021). Women have more anxiety and a tendency to misophobia than men.

Among those citizens who derive information mainly from social media, there were fewer people who trust both the authorities and their fellow citizens, as well as skepticism about medicine and vaccination.

The low level of trust in society and, above all, in medicine, harms the process of mass vaccination. Against the background of infodemic, social trust is declining and the psychological status of citizens is deteriorating (Vosoughi, Roy & Aral, 2018). The spread of fake information contributes to an increase in apathy, cynicism and extremism (Lazer et al, 2018). At the same time, according to most researchers, fake information is more easily disseminated than reliable one (Chakravorti, 2020; Limaye, 2020; Pulido, Villarejo-Carballido, Redondo-Sama, & Gómez, 2020). In addition, users who consume scientific news content have been shown to be less active or involved in the dissemination of scientific information (Bessi, Coletto, & Davidescu, 2015). At the same time, the encouraging conclusion of Spanish scholars (Pulido et al., 2020), obtained from careful research, that evidence-based (fact-checking) information is retweeted more than false information should be taken into account. The authors recommend that health authorities post more tweets from their official accounts and run information literacy schools. Also, researchers (Depoux et al., 2020), recommend the creation of interactive platforms and

dashboards to alert in real time to rumors and concerns related to the spread of the coronavirus worldwide, allowing policymakers and health officials and relevant stakeholders to respond quickly, proactively to mitigate misinformation and neutralize fakes. In our opinion, such work in Russia is currently insufficient.

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## Chapter #8

# HYBRID POLYGRAPH AND OCULAR-MOTOR DECEPTION TESTS FOR SCREENING AND SPECIFIC-INCIDENT INVESTIGATIONS<sup>1</sup>

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### ABSTRACT

We describe two experiments combining polygraph and ocular-motor methods to detect deception. The first evaluated a test covering four issues consisting of an automated polygraph and an ocular-motor deception format. 180 participants were randomly assigned to one of three conditions. One group stole \$20 from a secretary's purse and lied about it. Another group stole the \$20 and a ring from a desk and lied about both crimes. The third group was innocent answering all questions truthfully. Logistic regression combined features extracted to compute the probability of deception. The probability of deception was used to classify participants as guilty or innocent. On cross-validation, classifications were 92.2% and 90.0% correct for guilty and innocent participants, respectively. The second experiment evaluated a directed-lie protocol. 120 participants were randomly assigned to guilty (steal \$20) or innocent conditions. All took an automated polygraph and ocular-motor version of the test. On cross-validation, decision accuracy was 87.1% for the innocent and 85.5% for the guilty. Both experiments assessed an indirect measure of blood pressure known as pulse transit time which was diagnostic, making significant contributions to the logistic regression models. Polygraph signals contributed significantly to the decision models and produced modest improvements in classification accuracy.

*Keywords:* ocular-motor deception test, automated polygraph test, lie detection.

## 1. INTRODUCTION

Lying in interpersonal communication is a common behavior, and unfortunately, humans are good liars and/or poor lie-catchers. Research suggests about 54% of inter-personal credibility assessments are correct (Hartwig & Bond, 2011;2014; Vrij, 2008). While often trivial, lying can sometimes occur in high-stakes, important milieus. National security, criminal investigations, courtroom testimony, employment applications, relationships and political, settings are areas where lying can have serious consequences (Granhag & Stromwell, 2004).

One of the oldest tests used to improve veracity assessment is the polygraph, which is widely used (Honts, Thurber, & Handler, 2021). However, the polygraph has a long and controversial history. In the United States, federal, state, and local government agencies conduct polygraph tests to screen job applicants, test existing employees with security clearances, and conduct criminal investigations. Current estimates for U.S. federal government screening use are in the range of 70,000 examinations per year (Taylor, 2013). There are several polygraph interrogation techniques, and researchers debate their merits and limitations (Honts & Thurber, 2019; Iacono & Ben-Shakhar, 2019). The American Polygraph Association (APA) and the American Society for Testing and Materials (ASTM)

attempt to set standards for what constitutes a validated polygraph technique. And while there are many techniques available, there is no international standard for what constitutes a polygraph technique.

Additionally, there is no consensus on a single theory that explains the relationship between deception and observed effects on physiological measures (National Research Council, 2003). Physiological measures include electrodermal activity, blood pressure, heart rate, peripheral vasomotor activity, and respiration. Electrodermal reactions are most diagnostic in laboratory and field settings, followed by cardiovascular and respiration reactions (Kircher, Kristjansson, Gardner, & Webb, 2012; Raskin & Kircher, 2014). The estimated percentage of correct decisions for polygraph tests is approximately 89% for specific-incident criminal investigations and 85% for screening applications (American Polygraph Association, 2011; Honts, Thurber, & Handler, 2021).

## 2. BACKGROUND

The Ocular-motor Deception Test (ODT) is another psychophysiological technique to detect deception (Cook, Hacker, Webb, Osher, Kristjansson, Woltz, & Kircher, 2012; Hacker, Kuhlman, Kircher, Cook, & Woltz, 2014; Kircher, 2018). It offers the benefit of a less intrusive and likely largely independent assessment of veracity compared to the traditional polygraph test. The ODT uses a remote eye tracker to monitor eye movements and pupil size while the test subject reads and answers True/False statements presented serially by a computer. The ODT assumes that it is cognitively more demanding to deceive than tell the truth, and it assumes that deception is associated with emotional arousal. If those assumptions are correct, deception during the test should cause pupil dilation, suppress eye blinks, and produce diagnostic changes in reading patterns, response time, and error rates (Bradley, Miccoli, Escrig, & Lang, 2008; Kahneman, 1973). The results of laboratory and field research are generally consistent with those predictions. ODT accuracy rates ranged from 78% to 86% based on logistic regression analysis of features extracted from ocular-motor and behavior measures (Kircher, 2018; Kircher & Raskin, 2016).

The original ODT covered two relevant issues or topics of concern. In 2020, Potts introduced a new ocular-motor test format called the Multiple-Issue Comparison Test (MCT) that covered four relevant topics rather than two (Potts, 2020). His mock crime experiment had three conditions. One group committed a single crime, another group committed two crimes, and an innocent group committed no crimes. Potts measured pupil diameter, gaze position, blink rate, response time, and error rate. On cross-validation, logistic regression analysis correctly identified 53 of 60 truthful participants (88%) and 103 of 120 deceptive participants (86%).

Polygraph research indicates that it is better at identifying liars than that to which they lie (Barland, Honts, & Barger, 1989; Department of Defense Polygraph Institute, Research Division, 1997; Podlesny & Truslow, 1993). Potts' (2020) sought to improve the classification accuracy for role discrimination.

Potts' experiment included 60 innocent participants, 60 guilty of a single mock crime (steal cash), and 60 guilty of two crimes (steal cash and a gift card). A logistic regression function correctly identified truthful and deceptive answers on all four relevant issues in 93% of innocent participants and 78% of the guilty subjects. When the decision model was trained to classify participants as deceptive if they failed on any one or more of the four relevant issues, it correctly classified 83% of innocent subjects and 87% of guilty subjects. With that classification rule, the decision on a guilty participant was correct if they appeared deceptive to any one or more of the topics covered on the test, even those

answered truthfully. On the other hand, innocent participants had to appear truthful to all four relevant issues to be classified correctly. The results were promising in that Potts was able to reliably discriminate guilty roles in a laboratory experiment. Role identification would increase the utility of credibility assessment testing in the field.

We reasoned that if both polygraph and ocular-motor techniques yield diagnostic information about a person's deceptive status, we might improve accuracy by combining features extracted from the signals recorded during polygraph and ODT phases of a combined test protocol. If the polygraph is primarily emotion-based, and the ODT is primarily cognition-based, then different psychological mechanisms would underlie the two tests; and the measures they produce might make unique contributions to the logistic regression model and increase the accuracy of outcomes.

We developed a hybrid MCT test (HMCT) that combined measures obtained from a polygraph phase and a subsequent ODT phase. One reason to position the ODT after the polygraph is that the ODT asks over 200 questions, and polygraph measures tend to habituate after only a few repetitions of the test questions. In contrast, ocular-motor measures habituate slowly and retain diagnostic within-subject differences between question types over multiple repetitions of the test questions (Kuhlman, Webb, Patnaik, Cook, Woltz, Hacker, & Kircher, J 2011). Considering the different effects of habituation on polygraph and ocular-motor measures, it appeared more likely that a prior ODT would adversely affect a subsequent polygraph test than the reverse.

Another aim of the research was to evaluate a new method for measuring blood pressure during a lie-detection test. Currently, polygraph examiners use a partially inflated blood pressure cuff on the arm called the cardiograph to record changes in cardiovascular activity. The cardiograph correlated 0.84 with diastolic blood pressure recorded continuously with a medical device for monitoring blood pressure (Podlesny & Kircher, 1999).

Despite its simple design and low cost, the cardiograph is almost as diagnostic as medical-grade equipment for measuring relative changes in blood pressure in a polygraph test. However, the longer the cuff is inflated, the more uncomfortable it becomes to the test subject, limiting the number of questions polygraph examiners can ask before deflating the cuff to restore circulation to the lower arm.

For some time, psychophysicologists have explored the value of pulse transit time (PTT) as a continuous, indirect measure of arterial blood pressure (Geddes, Voelz, Babbs, Bourland, & Tacker, 1981; Obrist, Light, McCubbin, Hutcheson, & Hoffer, 1978; Obrist, Light, McCubbin, Hutcheson, & Hoffer, 1979). Contractions of the ventricles of the heart produce pulse waves that travel throughout the arterial system. PTT is the time it takes a blood pressure pulse wave to travel from the heart to a peripheral site such as a finger. As the pressure in the arterial system increases, the time it takes the pulse to travel from the heart to the finger decreases. Webb and Kircher (2005) measured PTT from the R-wave of the electrocardiogram (ECG) to the occurrence of the pulse in a finger photoplethysmogram (PPG). The R-wave of the ECG is associated with contraction of the left ventricle and initiation of the pulse wave. They found that PTT was as effective as the cardiograph for discriminating between truthful and deceptive people on polygraph tests.

### **3. EXPERIMENT 1**

#### **3.1. Objectives**

Experiment 1 had two objectives: It assessed the efficacy of the HMCT that combined an automated polygraph test with an ODT, and it assessed the efficacy of PTT for detecting deception at the categorical level (innocent or guilty) and at the level of involvement (guilty to zero, one, or two mock crimes).

## **3.2. Methods**

### **3.2.1. Participants**

We recruited 180 participants with advertisements in the temporary help wanted section of an online job site (59% female). Ages ranged from 19 to 56 years ( $M = 28.4$ ). Participants were offered \$40 for their time and promised a \$30 bonus if they passed the HMCT. Participants were randomly assigned to three groups of equal size ( $n=60$ ). One group was guilty of a single mock crime. Another group was guilty of two mock crimes, and the third group was innocent.

Participants who committed a mock crime located a secretary's office in a business setting, had a brief interaction with the secretary, left the office, waited for the secretary to leave the office, and then reentered the office. Participants who committed a single mock crime stole \$20 from the secretary's backpack. Participants who committed two crimes stole the \$20 and a ring from the desk. After completing their tasks, participants reported to the test proctor. The proctor calibrated the eye tracker and started the computer-administered test. Guilty participants were instructed to lie to questions about one or two of the four relevant issues on the test, whereas innocent participants were instructed to answer all questions truthfully.

### **3.2.2. Hybrid multiple-issue comparison test (HMCT)**

The HMCT covered four relevant issues. The first relevant issue was about the theft of \$20 (R1); the second was about the theft of the ring (R2); the third was about the theft of a cell phone (R3); and the fourth was about the theft of a set of AirPods (R4). No participants stole a cell phone or AirPods. A computer introduced the four relevant topics, provided instructions, and presented the test questions. Participants used the left and right mouse buttons to answer test questions Yes or No questions during the polygraph phase. During the ODT phase, participants used the left and right mouse buttons to answer True or False statements.

A GP-12 Physiology Monitor (J&J Engineering, Poulsbo, WA, USA) recorded skin conductance, respiration, electrocardiogram (ECG), and finger pulses from a photoplethysmograph (PPG). A Tobii 4C remote eye tracker (Tobii, Stockholm, Sweden) attached to the bottom of the computer monitor monitored left and right pupil size, horizontal and vertical gaze position, and fixations. The GP-12 and Tobii eye tracker recorded all signals continuously while the participant completed both test phases.

### **3.2.3. Polygraph phase**

The polygraph phase began with a preamble that introduced the relevant issues and a six-question practice test, after which the computer presented 12 Yes/No questions about each of the relevant issues (e.g., Did you steal the \$20?) plus 18 neutral questions (e.g., Is looking both ways before crossing the street a wise thing to do?). The computer presented test questions aurally and visually every 22 seconds to allow physiological reactions time to recover between questions.

We arranged the test questions to form all possible pairwise comparisons of relevant issues across the three sessions. The first half of session 1 asked about R1 and R2, and the second half of session 1 asked about R3 and R4. Session 2 paired R1 and R3 and then paired R2 and R4. The third session paired R1 and R4 and then R2 and R3, completing the set of possible pairwise comparisons. The computer informed participants about the forthcoming topics during the test, e.g., "Now you will be asked about the ring and the \$20." This arrangement allowed participants to focus on only two relevant issues at a time. Test questions were presented in random order, subject to the constraint that no two

questions of the same type appeared in immediate succession. Between sessions, the computer asked three simple arithmetic questions to clear working memory of the test topics.

### **3.2.4. Ocular-motor test phase**

The second phase was an ODT that contained 64 True/False statements about the four relevant issues divided into two sessions. The computer instructed participants to answer True or False statements as quickly and accurately as possible, or they might fail the test. The ODT put the test subject under time pressure to increase cognitive load. The computer then gave participants a six-item practice test with feedback about the number of statements they answered correctly and their mean response time.

During the ODT, the computer presented statements about the four relevant issues in random order, except that no two statements of the same type appeared in succession. Unlike the polygraph phase, the ODT contained no neutral statements, only statements about the four relevant topics, e.g., "I am guilty of taking the \$20 from the secretary's purse." For each relevant issue, the exculpatory answer was True for half the statements and False for the remaining statements. We balanced statements concerning the four relevant issues for length, negation, and passive voice. Between the two sessions, participants answered 10 True/False arithmetic statements.

### **3.2.5. Polygraph measures**

Skin conductance was recorded at 350 Hz from disposable Ag-AgCl snap electrodes attached to the palmar surface of the middle phalanges of two fingers on the left hand. Respiration was recorded at 350 Hz with a strain gauge in an elastic belt attached with Velcro around the chest. ECG was recorded at 1000 Hz from disposable Ag-AgCl snap electrodes attached to the dorsal surface of the left and right wrists. Finger pulses were recorded at 1000 Hz with a photoplethysmograph (PPG) attached to the middle finger of the left hand.

### **3.2.6. Pulse transit time (PTT)**

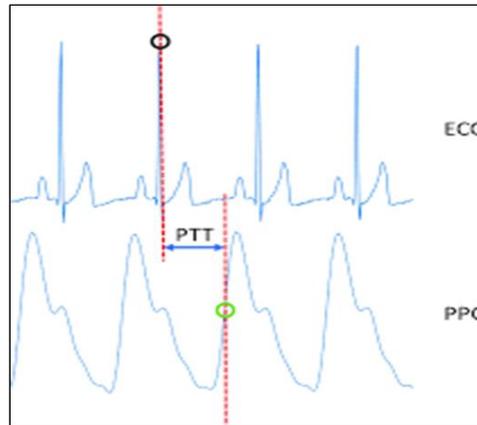
Figure 1 illustrates the measurement of PTT. The algorithm identified the R-waves in the ECG (spikes) and the steepest slope in ascending limb of finger pulses recorded by the PPG. PTT was the time interval between the R-wave and steepest slope in the subsequent finger pulse. Before measuring PTT, the algorithm removed baseline drift from the ECG with a 2-pole high-pass Butterworth filter,  $f_c = 2$  Hz. It then used a slope detector to identify R-waves in the ECG. It computed the range for an interval that began at the first sample and ended at the 25th (25 ms) and stored that range. It incremented the scoring window by 1 ms, measured the range of filtered ECG values for samples 2 through 26, and stored that range. The computer incremented the scoring window by 1 ms and repeated that process for the entire ECG signal. The algorithm then transformed the array of ranges to standard scores. Outliers in the array of standard scores ( $z > 4$ ) started a forward search for a maximum  $z$  score within 70 ms. We took the occurrence of the maximum  $z$  score as an R-wave. The algorithm skipped forward 300 ms from the detected R-wave and started a new search for the next outlier ( $z > 4$ ). This process continued until the algorithm reached the end of the array. The algorithm occasionally missed an R-wave in the ECG signal and inserted heartbeats into the array to interpolate across interbeat intervals that exceeded 1300 ms. The algorithm missed 25 of 18,372 R waves in ECGs of 13 randomly selected subjects (<.02%).

The PPG signal also was conditioned prior to the measurement of PPT. The computer smoothed the PPG with a 2<sup>nd</sup>-order Savitsky-Golay filter (length = 401 ms) and then applied a 2-pole Butterworth high-pass filter (fc = 5 H.Z.) to the smoothed signal. The steepest slope in the original finger pulse wave was the maximum value in the filtered photoplethysmogram between two R-waves in the ECG (Webb & Kircher, 2005).

The computer measured the interval from each R-wave to the steepest slope in the filtered PPG signal between 90 ms and 350 ms after the R-wave. It stored PTT as a square wave at 60 Hz that showed PTT change in ms at each heartbeat.

Figure 1.

*Measurement of pulse transit time (PTT) from the R-wave in the electrocardiogram (ECG) to the steepest slope in the photoplethysmogram (PPG).*



### 3.2.7. Cohens' d feature scores

We extracted 14 features from the signals generated by the physiology monitor and eye tracker, such as the amplitude of the pupil reaction and mean pulse transit time. Most of those features are described elsewhere (Kircher & Raskin, 2002; 2016). The computer obtained a score on each feature for the 66 polygraph questions and 64 ODT statements. For some features, such as skin conductance, a high score indicated that the person showed a strong reaction to the test question. For other features, such as respiratory activity, a low score indicated that the person reacted to the question. We reversed the sign of features when relatively small values indicated strong reactions. Thus, for all features, higher scores were indicative of stronger reactions to test items.

The scores for each feature were used to compute Cohen's d, a within-subject standardized distance between relevant issues. For example, we measured the amplitude of pupil reactions to each of 48 polygraph questions, 12 for each of the four relevant topics, and calculated the mean and variance of each set of 12 within-issue measurements. The square root of the mean of the four variances provided a pooled measure of the within-issue standard deviation. Cohen's d was the difference between the mean for a relevant issue and the smallest of the four observed means divided by the pooled within-issue standard deviation. The relevant issue with the smallest observed mean served as the person's baseline, and it varied over people and features. The Cohen's d score for each relevant issue was its distance from the person's minimum relevant reaction.

### 3.3. Results of experiment 1

The data matrix consisted of a Cohen's  $d$  score for each participant's four relevant issues, phase (ODT or polygraph), and feature. An exploratory logistic regression identified a combination of nine features that distinguished between relevant issues answered truthfully or deceptively. The analysis selected six features from the polygraph phase and three features from the ODT phase. The most diagnostic feature was the change in pupil size during the polygraph phase of the test. PTT correlated significantly with deceptive status ( $r_{pb} = -.418, p < .001$ ) and was among the variables selected for the logistic regression model.

A procedure known as  $k$ -fold validation provided estimates of how well the model would perform if tested on a new sample of cases. The " $k$ " refers to the number of subgroups formed from the entire sample. We divided the sample of 720 relevant issues into six subsamples ( $k=6$ ) of 120 issues and conducted a 6-fold validation. Of the 120 questions in each subsample (fold), participants answered 90 truthfully and 30 deceptively.

The first subset comprised a "hold-out subsample." We removed it from the dataset and combined the remaining subsets to create a training set. We used the training set to develop a logistic regression equation that was then used to classify the relevant issues in the hold-out subsample. We recorded the accuracy for the hold-out subsample. The accuracy of classifications in the hold-out subsample was less biased than the accuracy in the training set because the hold-out relevant issues were not used to optimize feature coefficients in the regression equation.

We returned the first subset to the training set and removed the second subset. The second subset served as a new hold-out subsample. We created a new logistic regression equation with all but the second subset of relevant issues. That new model was used to classify the relevant issues in the hold-out subsample, and we recorded its accuracy. We repeated this process for each of the remaining subsets. The best estimate of accuracy for the model was the mean accuracy across the six hold-out samples.

Table 1 reports the percent correct decisions for questions answered truthfully or deceptively for each hold-out subsample (fold). Accuracy estimates ranged from 80.0% to 96.7% correct. Mean accuracy was 91.1%.

*Table 1.*  
*Percent Correct Decisions for Questions Answered Truthfully or Deceptively in 6-fold Validation.*

	Fold 1	Fold 2	Fold 3	Fold 4	Fold 5	Fold 6	Mean
<b>n</b>	120	120	120	120	120	120	720
<b>Truthful</b>	92.2	87.8	94.4	93.3	93.3	92.2	92.2
<b>Deceptive</b>	93.3	96.7	93.3	80	86.7	91.7	90.0
						<b>Mean Accuracy</b>	<b>91.1</b>

The computer used the posterior probabilities of deception in the hold-out samples to classify participants as either truthful to all four of the relevant questions or deceptive to any one or more of the relevant questions. Participants were classified as innocent if the posterior probability of deception was less than or equal to .50 on all four relevant questions. Otherwise, the computer classified the participant as guilty.

### **3.4. Conclusions of experiment 1**

We conducted z tests to compare the accuracy of the statistical classifier to chance (50%). All of the accuracy rates reported below were significantly greater than 50% at  $p < .001$ .

The regression equations with polygraph and ocular-motor features correctly classified 90% of the 60 innocent subjects and 91.7% of 120 guilty participants. Accuracy on cross-validation of a logistic regression model that included only ocular-motor measures was 88.3% for innocent participants and 85.8% for guilty participants. On average, accuracy was 4% higher with polygraph measures than without.

Guilty participants were deceptive to some questions and truthful to others. If we considered the classification of a guilty participant correct only when the decisions on all four relevant issues were correct, the accuracy on that group dropped from 91.7% to 75.8%.

## **4. EXPERIMENT 2**

### **4.1. Objectives**

We designed Experiment 2 to explore the use of polygraph and ocular-motor features for a hybrid directed-lie test. All polygraph techniques compare a person's physiological reactions to two types of questions. The person is classified as deceptive if reactions to target or relevant questions are stronger than their reactions to comparison questions. Conversely, the person is classified as truthful if reactions to comparison questions are similar or stronger than their reactions to target or relevant questions.

The directed-lie test compares reactions to relevant questions about the crime to directed lie questions about transgressions made sometime in the person's lifetime. An example directed lie question is, "Have you ever broken a rule or regulation?" Before the test, the test subject is instructed to lie to directed lie questions. Since everyone has broken a rule or regulation at some point in their life, to deny it would be a lie. Test subjects are told it is essential to know what it looks like when the person lies, and if they do not lie and react to the directed lie questions, they will fail the test. The directed-lie test predicts that innocent subjects will be more concerned about the directed lie questions and react more strongly to them than relevant questions. It also predicts that guilty subjects will be more concerned, and react more strongly, to relevant questions than directed-lie questions (Bell, Kircher & Bernhardt, 2008; Honts & Reavy, 2015).

The procedures in Experiment 2 were the same as those in Experiment 1, except where noted below.

### **4.2. Methods**

#### **4.2.1. Participants**

We recruited a new sample of 124 participants (44% female), paid them \$40-\$70 for one hour of participation, and randomly assigned them to two groups of equal size ( $n=62$ ). One group stole \$20 as described above, and the other group was innocent. Ages ranged from 19 to 74 years ( $M = 28.6$ ).

**4.2.2. Hybrid directed lie comparison test (HDLC)**

The HDLC began with a preamble that introduced the relevant issue and described the directed lie questions. The computer then administered a practice test to ensure participants understood the requirement to lie to directed lie questions. After the practice test, the computer asked a set of 10 Yes/No questions three times in different orders at a rate of one question every 22 seconds. The set included an initial question to evoke an orienting response, three relevant questions about the theft of the \$20 (R1), three directed lie questions, and three simple arithmetic questions.

In the subsequent ODT phase, the computer presented 36 T/F statements twice in different orders. Twelve of the 36 statements asked about the theft of the \$20, 12 were directed-lie statements, and the remaining 12 were simple arithmetic statements.

**4.3. Results of experiment 2**

Eleven of 15 features extracted from the polygraph and ocular-motor phases correlated significantly with deceptive status. PTT correlated  $-.464$  with deceptive status,  $p < .001$ . Five of the 11 features contributed significantly to a logistic regression equation and included PTT. The analysis indicated that features obtained only during the polygraph phase of the test contributed significantly to the regression model. Thus, the ODT phase of testing did not contribute significantly to the model.

For experiment 2, a k-fold ( $k=4$ ) validation was conducted. Table 2 reports the four-fold validation of the 5-feature regression model for each of the four subsets of participants.

*Table 2.*  
*Percent Correct Decisions for Questions Answered Truthfully or Deceptively in 4-fold Validation.*

	Fold 1	Fold 2	Fold 3	Fold 4	Mean
<b>n</b>	30	30	30	34	124
<b>Truthful</b>	94.1	86.7	80.0	86.7	87.1
<b>Deceptive</b>	76.5	73.3	93.3	100.0	85.5
	<b>Mean Accuracy</b>				<b>86.3</b>

**4.4. Conclusions from experiment 2**

The mean accuracy for the polygraph phase was 86.3% when the posterior probability of deception was assumed to be 0.5. However, in a criminal investigation, it may be difficult to defend a decision when the posterior probability of deception is near 0.50 (chance). We re-computed accuracy rates using posterior probabilities of deception from the four hold-out samples and classified tests as inconclusive if they produced a probability of deception between .45 and .55. Of the 124 HDLC tests, 10 (8.1%) were inconclusive. Excluding inconclusive outcomes, the mean percent correct decisions was 89.3% for

innocent participants and 87.9% for guilty participants. The mean accuracy of the HDLC on cross-validation was 88.6%.

We also examined the effect of eliminating polygraph features that required the attachment of sensors to the test subject and used only measures obtained with the remote eye tracker. The accuracy based on probabilities from the 4-fold validation of a model with only ocular-motor features was 82.3% for innocent participants and 87.1% for guilty participants. The mean accuracy was 84.7%. With an inconclusive region for unbiased posterior probabilities of deception that ranged from .45 to .55, 9 of 124 tests were inconclusive (7.3%). The mean percent correct decisions was 89.5% for innocent participants and 84.5% for guilty participants. Excluding inconclusive outcomes, mean accuracy was 87.0%. Adding polygraph measures to ocular-motor measures improved decision accuracy from 87% to almost 89%.

## 5. FUTURE RESEARCH DIRECTIONS AND LIMITATIONS

Field research on credibility assessment is challenging because absolute knowledge of the person's deceptive status (ground truth) is rarely available, especially for innocent people. Reviews of laboratory and field studies on ODT accuracy show similar accuracies in English-speaking, Spanish-speaking, and Middle Eastern cultures (Kircher, 2018; Kircher & Raskin, 2016). Although the present findings are promising, future research should assess the accuracy of HMCT and HDLC tests in real-world settings and other cultures and evaluate the theoretical basis of ocular-motor correlates of deception.

## 6. CONCLUSION/DISCUSSION

The findings of both experiments indicate that polygraph and ocular-motor measures achieve high levels of discrimination between truthful and deceptive people in a laboratory setting. The findings also suggest that polygraph measures make small but significant contributions to classification accuracy compared with only ocular-motor measures. Decision accuracy with polygraph measures ranged from 86% to 91%, and accuracy without polygraph measures ranged from 85% to 87%. Whether a slight gain in accuracy justifies the inconvenience of attaching multiple sensors to the body may depend on the circumstances. For example, even a slight gain in accuracy would be justified in a capital case to ensure the most valid decision. It would not be as essential in a pre-employment screening setting when many people are competing for a few positions, and the goal is to narrow the pool of candidates for subsequent evaluations, such as background checks, work history, or psychological testing.

The results obtained with the PTT measure derived from the ECG and PPG were consistent with those reported previously (Webb & Kircher, 2005). PTT contributed significantly to the logistic regression models for both the HMCT and the HDLC. PTT is less invasive than the cardiograph and could replace the cardiograph in polygraph tests since both signals provide indirect measures of arterial blood pressure (Numaguchi, Kircher & Raskin, 1994; Podlesny & Kircher, 1999). Although PTT is less invasive than the cardiograph, it still requires that ECG and PPG sensors be attached to the test subject. In addition, PTT requires high-quality ECG and PPG recordings. Poor signal quality or artifact in either the ECG or the PPG signal corrupts PPT and causes data loss.

In Experiment 1 and Experiment 2, pupil enlargement was more diagnostic than traditional polygraph measures, and these findings agree with those reported by Webb, Honts, Kircher, Bernhardt, and Cook (2009). Among the traditional polygraph measures, changes in skin conductance are usually more diagnostic than cardiovascular or respiratory signals (Kircher & Raskin, 2002; Meijer, Selle, Elber, & Ben-Shakhar, 2014). In Experiment 1 and Experiment 2, pupil size correlated more highly with deceptive status than skin conductance and contributed more to the decision models. The present findings suggest that traditional polygraph techniques would likely benefit from measures of pupil size.

Kircher and Raskin (2016) review evidence that supports the idea that the present findings will generalize to field settings. However, we estimated accuracy with people seeking temporary work, all of whom we asked about specific incidents. Questions that address a specific event, such as the theft of \$20, were justified in Experiment 2 because it tested a protocol designed for use in specific-incident criminal investigations. However, the HMCT was designed for screening applications where questions are likely to be broadly worded, such as "Did you ever commit espionage?" or "Have you withheld any work-related discipline?" The accuracy estimates in Experiment 1, where we asked participants about specific criminal acts, might not generalize to the more broadly worded questions that characterize screening tests in field settings.

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## Chapter #9

### THREATENING VIEW OF ILLNESS, PSYCHOLOGICAL DISTRESS, AND WELL-BEING AMONG MALAYSIANS DURING COVID-19 PANDEMIC

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#### ABSTRACT

COVID-19 Pandemic affects the well-being and psychological distress of Malaysian due to the perception of the COVID-19 as a health threat. This study aimed to examine the degree to which the COVID-19 is perceived as threatening or benign and the psychological distress among Malaysians during the pandemic and the predictive factors of Malaysian well-being. The Brief Illness Perception Questionnaire), the Depression Anxiety Stress Scale-21, and the Warwick–Edinburgh Mental Well-being Scale were disseminated through an online survey – google form to the participants using a snowball sampling technique. The finding revealed that 36.5% of the participants reported COVID-19 pandemic had severely affected their life, the participants reported they were absolutely no personal control over the COVID-19 situation (>50%) and 90.5% reported they were not understanding the COVID-19 situation in Malaysia on the first phase of MCO. However, they were very concerned about the COVID-19 outbreak situation in Malaysia. More than 85% reported the pandemic extremely and moderately affected their emotion. They (46.8% of participants) perceived that the existing treatments were not helpful on the COVID-19 pandemic. The study also found that the participants (N=560) perceived significantly higher levels of depression, anxiety, and stress during MCO compared to before MCO.

*Keywords:* threatening view of illness, psychological distress, well-being, COVID-19 pandemic.

#### 1. INTRODUCTION

On 31 December 2019, the World Health Organisation (WHO) China Country Office was informed of cases of pneumonia unknown aetiology (unknown cause) detected in Wuhan City, Hubei Province of China, now known as Coronavirus disease (COVID-19). From 31st December 2019 through 3rd January 2020, a total of 44 case patients with pneumonia of unknown aetiology were reported to WHO by the national authorities in China. As of 20 January 2020, 282 confirmed cases of 2019-nCoV have been reported from four countries including China (278 cases), Thailand (2 cases), Japan (1 case) and the Republic of Korea (1 case). As of 27 March 2020, the total global number of COVID-19 cases has surpassed 500,000 (WHO, 2020). As reported on 15 April 2020, there are 210 Countries and Territories around the world that have a total of 2,015,569 confirmed cases of the coronavirus COVID-19 and a death toll of 127,635 deaths (Worldometer, 2020). One year and five months later, as reported on 13 September 2021, there have been 224,511,226

confirmed cases of COVID-19, including 4,627,540 deaths, reported to WHO. The global increasing rate of the COVID-19 cases was more than 11 thousand per cent and the COVID-19 deaths cases increased more than three thousand per cent.

## **2. BACKGROUND**

On 16 March 2020, the Prime Minister of Malaysia announced the first phase of Movement Control Order (MCO) in Malaysia due to the COVID-19 pandemic, necessitating the closure of places of worship, work, and education. Families are encouraged to self-isolate and to “stay at home” to curb the spread of the virus (Jabatan Perdana Menteri, 2020). The COVID-19 pandemic MCO has been drastic changes at the individual and family level in the lives of Malaysians. They are forced to adapt to various “new norms”, such as working from home for working adults, and a transition to learning online for those who are going to school and university (Chua et al., 2021). Apart from that, parents experience the difficulty of having to work and take care of children at the same time from the same sphere of their homes (Spinelli, Lionetti, Setti, & Fasolo, 2020). As the sequelae of the stress experienced in the family and spousal unit, studies have also indicated increased family conflicts and lower levels of quality in the relationship between spouses and family members (Luetke, Hensel, Herbenick, & Rosenberg, 2020; Pieh, O’ Rourke, Budimir, & Probst, 2020). This is a serious issue as the couple or spousal unit of the family constitutes the core of the family’s well-being and the children’s physical and psychosocial development (Härkönen, Bernardi, & Boertien, 2017).

During the pandemic, levels of anxiety, loneliness, and boredom could impact individual well-being. Based on a meta-analysis of 43 studies focusing on anxiety during COVID-19, an estimated 25% of the population has reported anxiety symptoms, and anxiety has increased threefold since the beginning of the pandemic (Pieh et al., 2020). A study in Ghana showed an increase in boredom and a corresponding decrease in well-being (Santabárbara et al., 2021). Interestingly, however, a longitudinal study in the UK indicated that the level of positive well-being had increased, and the level of loneliness did not change (Boateng et al. 2021). Low et al., (2020), found increased anxiety and depression and lower well-being among the general population during the COVID-19 pandemic. However, it is still unclear which aspects of relationship quality have been affected by this pandemic and whether the relationship quality affects the well-being of the couple.

## **3. OBJECTIVES**

This study aimed to examine the perceived psychological distress and relationship quality among couples before and during MCO in Malaysia and factors that affect participants' well-being.

## **4. METHODS**

### **4.1. Participants**

A total of 560 participants who were 18 years old and above, had married or cohabiting couples and citizens of Malaysia were involved in the current study. The sample was selected randomly using a convenience sampling method. A self-administered online survey questionnaire was distributed on WhatsApp, Telegram, Facebook, Email, etc. to the

targeted couples. There were 246 (or 43.9%) males and 314 females who participated. Their age ranged from 21 to 67 years old (mean = 40.38, s.d = 11.43). In terms of current relationship status, most of the respondents were married (92%), there were 32 (5.7%) adults in a committed relationship and living together, 12 (2.1%) of them had engaged and living together with a partner. Their average year of married was 14.8 years (s.d = 10.71).

#### 4.2. Instruments

The instrument used contained four parts: the demographic data consisted of age, gender, current relationship status, and duration of a relationship. Part 2, The Depression Anxiety Stress Scales (DASS-21) designed by Lovibond and Lovibond (1995). DASS consisted of 21 items, seven items for each subscale. The item response format was on a 4-point scale (0 = did not apply to me at all to 3 = applied to me very much or most of the time). The reliability for DASS-21 showed very good reliability in the current study. The Alpha Cronbach = .94 (data during MCO) and .92 (data before MCO) for depression scale, the Alpha Cronbach = .93 and .89 during and before MCO for anxiety scale and Alpha Cronbach = .93 (during MCO) and .89 (before MCO) for stress scale.

Part 3 was the brief illness perception questionnaire (IPQ-B) developed by Broadbent, Petrie, Main, and Weinman (2006). IPQ-B was an eight-item short version measure developed from the longer 80-item IPQ-R. It was used to measure cognitive perceptions of illness, such as consequences, timeline, personal control, treatment control, identity for describing the condition, coherence, concern, and emotions. The items were rated on an ordinal scale range from 0 to 10. In this study, only six relevant items were used. In previous studies, the psychometric properties of the IPQ-B have been examined in a wide variety of illnesses. Van Oort, Schröder, and French (2011) and French, Cooke, McLean, Williams, and Sutton (2007) have undergone intensive discussion about the content validity and construct validity of the IPQ-B. IPQ-B showed only a moderate level of reliability for the current study with a Cronbach's Alpha = .54. However, in this study, IPQ-B was analysed based on the individual item. The response on the items was then recategorized into three-level: low (score range from 0 to 3), moderate (score range from 4 to 7) and high (score range from 8 to 10).

Warwick–Edinburgh Mental Well-being Scale (WEMWBS), contained 14 items that measured positive aspects of mental health within two weeks (Tennant, Fishwick, Platt, Joseph, & Stewart-Brown, 2006). It covered both hedonic and eudaimonic aspects. The items were rated on a 5-point Likert scale ranging from 1 = None of the time to 5 = All of the time, and a global score is obtained adding all the items. Higher scores indicating higher levels of mental well-being. WEMWBS showed very good reliability for the current study with a Cronbach's Alpha = .96.

#### 4.3. Data analysis

Statistical analysis was performed using Program IBM SPSS Statistic version 25.0. Descriptive statistics such as frequency and percentage were used to report demographic information of participants, Pair Samples t-test was used to analyse the difference in perceiving psychological distress and relationship quality during and before COVID-19 pandemic MCO among couples in Malaysia. The multiple regression analysis was conducted to determine the effect of relationship quality on participants' well-being during the COVID-19 pandemic.

## 5. RESULTS

### 5.1. Threatening view of COVID-19 pandemic

The data were collected in March 2020, on the first phase of Movement Control Order (MCO) in Malaysia due to the COVID-19 pandemic. Six questions that measured the degree to which the COVID-19 is perceived as threatening or benign have been asked to the participants. Table 1 showed the summary of Malaysians' perceptions of the COVID-19 pandemic. The finding revealed that 36.5% of the participants reported COVID-19 pandemic had severely affected their life and 43.7 reported being moderately affected. More than 50% of the participants perceived they were absolutely no personal control over the COVID-19 situation (e.g., not getting infected or getting over it), 38.7% indicated moderate personal control and only 10.2% perceived they had an extreme amount of personal control over the pandemic. When the participants were asked how well they understand the COVID-19 situation, 90.5% reported they were not understanding the COVID-19 situation in Malaysia on the first phase of MCO.

Almost all the participants (90.2%) indicated they were very concerned about the COVID-19 outbreak situation in Malaysia. The pandemic was also affected their emotion (e.g., the situation makes them angry, scared, upset, and depressed). More than 85% reported the pandemic moderately and extremely affected their emotion. The responses to the question related to whether the existing treatments in Malaysia can help COVID-19 patients, 46.8% of the participants claimed that the existing treatments were not helpful and only 17.1% of the participants said the treatments were very helpful.

*Table 1.*  
*Brief Illness Perception of COVID-19 Pandemic.*

Brief Illness Perception	Level of threatening	Frequency	Per cent (%)
How much has the COVID-19 pandemic affected your life?	Less affect my life	116	18.7
	Moderately affect my life	271	43.7
	Severely affect my life	226	36.5
How much control do you feel you have over the COVID-19 pandemic?	Absolutely no control	312	50.3
	Moderate control	240	38.7
	Extreme amount of control	63	10.2
How well do you feel you understand the COVID-19 situation?	Not understand	561	90.5
	Moderately understand	53	8.5
	Clearly understand	4	.6
How concerned are you about the COVID-19 pandemic?	Not concern	8	1.3
	Moderately concern	53	8.5
	Very concern	559	90.2
How much does the COVID-19 pandemic affect you emotionally?	Less affected emotionally	85	13.7
	Moderately affected emotionally	253	40.8
	Extremely affected emotionally	279	45.0
How much do you think existing treatments can help COVID-19 patients?	Not helpful	290	46.8
	Moderately helpful	220	35.5
	Very helpful	106	17.1

### 5.2. Psychological distress level before and during COVID-19 pandemic

Paired samples t-test was used to analyse perceive psychological distress and relationship quality among couples before and during MCO in Malaysia. The result revealed that the depression ( $t = 11.33, p < .05$ ), anxiety ( $t = 11.50, p < .05$ ), and stress ( $t = 11.89, p < .05$ ) perceived by respondents different significantly before and during MCO in Malaysia due to the COVID-19 pandemic. We found that the couples perceived a significantly higher level of depression, anxiety, and stress during the COVID-19 pandemic MCO as compared to before MCO (refer to Table 2).

Table 2.  
*The Pair Samples t-test of the Psychological Distress among Couples Before and During COVID-19 Pandemic MCO in Malaysia.*

Variables	N	Mean	Std. Deviation	t	Sig.
Depression During MCO	557	2.96	3.79	11.33	.001
Depression Before MCO	557	1.73	2.93		
Anxiety During MCO	557	3.34	3.75	11.50	.001
Anxiety Before MCO	557	2.11	3.05		
Stress During MCO	555	4.37	4.22	11.89	.001
Stress Before MCO	555	2.95	3.44		

### 5.3. The predictive factors of Malaysians' well-being during COVID-19 pandemic

The Multiple Regression analysis with model 'Enter' was used to analyse the effect of psychological distress factors and threatening view of COVID-19 Pandemic on Malaysians' well-being during the pandemic. The result indicated that the model of threatening view of COVID-19 explained a total of 3.6% of the total variance in well-being among the Malaysians ( $F_{(1, 509)} = 18.88, p < .05$ ). The total of this threatening perception ( $\text{Beta} = -.19, p < .05$ ) negatively affected the participants' well-being. While, the model that consisted of the six dimensions significantly explained only a total of 7.1% variance in well-being among the Malaysians ( $F_{(6, 504)} = 6.42, p < .05$ ). The result further reported that only the dimension of understanding the COVID-19 situation was a significant predictor of the participants' well-being. This variable predicted their well-being negatively during the pandemic, which explained that the participants who were not understanding the COVID-19 pandemic situation tended to have lower well-being, or were in reverse (refer to Table 3).

Table 3.  
*Multiple Regression Analysis on the Effect of the Dimension of Illness Perception on Well-Being among Malaysians During COVID-19 Pandemic.*

Predictor	Beta	t	Sig. t
Consequences on life	-.04	-.75	.45
Concern about pandemic	.05	1.10	.27
Emotional representation	-.09	-1.76	.08
Personal control	-.09	-1.92	.06
Treatment control	-.10	-1.93	.06
Understanding situation	-.13	-2.60	.01
R <sup>2</sup>	.071		
F	6.42		
Sig. F	.001		

The analysis of the psychological distress on well-being showed that the model explained a total of 14.2% of the total variance in well-being among the participants. The results reported that the depression (Beta = -.16) and stress (Beta = -.20) predicted significantly and negatively participants' well-being during pandemic ( $F_{(3, 511)} = , p < .05$ ). The result explained that during the pandemic, those who perceived high depression and stress tended to have lower well-being, or the reverse (refer to Table 4).

*Table 4.*  
*Multiple Regression Analysis on The Effect of Psychological Distress on Well-Being among Malaysians During COVID-19 Pandemic.*

Predictor	Beta	t	Sig. t
Depression During MCO	-.16	-2.20	.028
Anxiety During MCO	-.05	-.56	.579
Stress During MCO	-.20	-2.42	.016
R <sup>2</sup>	.142		
F	28.28		
Sig. F	.001		

## 6. FUTURE RESEARCH DIRECTIONS

The Finding of this study has significance in informing public health interventions for mental health. First of all, amidst worsening well-being and psychological distress, there is a need for interventions that target every individual. This is because during the movement control order during the pandemic, the individual may spend a longer time with each other within the same living quarters. The interventions may teach the individual to understand and support one another's mental well-being through this crisis in the long run. Family interventions may be especially relevant in Malaysia as the influence of collectivistic culture, religion, and the government emphasis on the family unit may enable these interventions to be culture-appropriate and widely accepted (Sumari, Baharudin, Khalid, Ibrahim, & Ahmed Tharbe, 2020).

## 7. CONCLUSION/DISCUSSION

In this study, we found that the Malaysians reported a higher level of depression, anxiety, and stress during the COVID-19 Pandemic in Malaysia as compared to before pandemic. We also found that depression and stress contributed to decreasing participants' well-being. However, these variables only explained 14.2% of the variance in the participants' well-being. This finding also indicated that the decrease in well-being could be due to other variables that do not measure in this study. Part of the finding of this study was consistent with Xiong et al. (2020) findings that indicated a high level of depression, anxiety and stress in the general population in China, Spain, Italy, Iran, the US, Turkey, Nepal, and Denmark during the COVID-19 pandemic. A systematic review by Krishnamoorthy and colleagues (2020) revealed that more than half of the general population were adversely affected psychologically during the COVID-19 pandemic (Krishnamoorthy, Nagarajan, Saya, & Menon, 2020). Günther-Bel and colleagues (2020) found that participants suffered from higher levels of psychological distress during the COVID-19 pandemic. They found that the participants especially those with children

reported higher levels of psychological distress during the lockdown in Spain, thus contributing to lower levels of well-being.

The COVID-19 pandemic has created uncertainty to the public globally and posed a significant impact and challenge to the economy, health systems and society (Walker et al., 2020) especially when there were no vaccines or cures were available at the early stage of the pandemic in 2020. Confidence in the healthcare system is crucial during the unprecedented pandemic. A study was done by Fai et al. (2020) to assess how confidence in health care systems affects mobility and compliance during the COVID-19 pandemic across 38 European countries and 621 regions. The findings revealed that regions with low levels of healthcare confidence are exhibit compliance behaviour concerning minimizing social contact by staying at home. The rising number of cases globally has impacted the health systems all over the world including Malaysia. Malaysia has taken a drastic measure by imposing the first MCO in March 2020 when an increasing number of positive cases were recorded to prevent the spreading of new infections (Bunyan, 2020). The limited understanding of the COVID-19 virus during the early stage when it was first discovered has created more uncertainty for the public. Therefore, it is understandable that almost half of the participants in this study feel lack of confidence that the existing treatments did not help treat COVID-19 especially when the knowledge about the pandemic and the suitable treatment is partial, unavailable specific vaccine and the nation has never faced a pandemic such as COVID-19 before

This study also suggested that participants who lack understanding of the COVID-19 pandemic situation tended to have lower mental well-being. The overwhelming information from social media or other resources has caused an 'infodemic' and consequently affected the public mental health as much of the information or news are not necessarily true (Zarocostas, 2020). Conspiracy theories, unreliable information and fake news circulated played a role in affecting the mental health of the population which may cause psychological distress such as anxiety, depression and stress due to the influence of what they read and see from unreliable sources (Pedrosa et al., 2020). A study was done by Wang et al. (2019) in China reported that accurate health-related to COVID-19 information and carrying out precautionary measures such as hand washing/sanitizing, wearing masks and social distancing are associated with the lower level of psychological wellbeing.

There are a few limitations to this study. First of all, as a cross-sectional survey, we are not able to infer causality in the association between the variables. Secondly, as this is an online survey, we were only able to reach the population segment that has access to the internet. Finally, this study employed a series of a questionnaire from a larger study with more measures, which may give rise to response fatigue. As a result, some participants may not have completed the survey. Future studies should focus on a smaller number of questions to be surveyed to an online population. In terms of community interventions, there is a need for further research to explore community-based interventions which focus on the couple sub-system, taking into account its risk and protective factors in the new normal. A longitudinal study design would be better able to track the changes in the participants' psychological distress, relationship quality and well-being concerning the development of the COVID-19 pandemic.

Amid the COVID-19 pandemic, Malaysians are facing increased stress. Thus, this study aimed to examine the perceived psychological distress and threatening view of the pandemic among Malaysians during the pandemic. As expected, the participants perceived significantly higher levels of psychological distress during the pandemic compared to before. In terms of threatening views of the pandemic, the participants who were not understanding the COVID-19 pandemic situation tended to have lower well-being. We also

found that depression and stress influenced participants' well-being negatively. Therefore, this study will inform healthcare professionals to develop psychological interventions post-COVID-19 which help to cope with possible mental health problems and to potentially increase Malaysian's resilience as we face the pandemic together in the long term. This includes cognitive behavioural therapy and systemic interventions for couples.

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Threatening View of Illness, Psychological Distress, and Well-Being among Malaysians during  
COVID-19 Pandemic

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**Section 2**  
**Educational Psychology**



## Chapter #10

### COMMUNICATION SKILLS AND MORAL DEVELOPMENT BETWEEN ELEMENTARY AND MIDDLE SCHOOL STUDENTS IN JAPAN

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#### ABSTRACT

The method of conducting moral lessons has changed in Japan since 2018. Specifically, the focus of moral lessons has shifted from emotional understanding to thinking and deliberation. Consequently, it is essential to consider the development of morality and the ability to think and deliberate in moral lessons. However, scant studies have been conducted in Japan on the teaching of elementary and middle school students' abilities to think and deliberate. Therefore, this study aimed to clarify the development of communication skills and morality in elementary and middle school students. The results revealed that communication skills declined with age, but morality enhanced as the students became older. No gender differences were discerned in the moral development of males and females from the sixth grade of elementary school to the ninth grade of middle school. Based on these results, this study offers implications regarding the methods for conducting moral lessons centered on thinking and deliberating.

*Keywords:* ability to deliberate, social perspective-taking, development, gender differences, Japan.

#### 1. INTRODUCTION

A school subject targeting moral lessons existed in compulsory education in Japan since the end of World War II. While not a formal subject, the sessions were labeled “special time for moral lessons” (Kaizuka, 2015; Roesgaard, 2016). No national textbook was designated by the government, and moral lessons were conducted in different directions, depending on the teacher-in-charge. Therefore, instead formal moral lessons, varied activities were conducted concerning moral lessons—for example, seat changes, dodgeball festivals, or alternative lessons in other subjects. If formal moral lessons were conducted, they would involve the comprehension of supplementary readers or the interpretation of emotions sensed by characters in books (Nagata & Fujisawa, 2012; Fujisawa, 2019). Therefore, the “special time for moral lessons” had not played important roles in Japanese schools. Thus, despite some teachers actively conducting the “special time for moral lessons,” moral lessons did not improve in Japan for a long time (Araki, 2014; Maeda, 2015). The value of moral lessons is emphasized when the problem of severe bullying emerges in schools. However, educators did not focus on probing the development of morality in students.

In 2018, the curricular name of “special time for moral lessons” was altered to “special subject: moral lessons,” and teachers were required to award written grades to learners. Additionally, the contents of moral lessons in elementary and middle schools were clarified concretely. Consequently, teachers have been responsible for delivering the so-named “think and deliberate” moral lessons to their students. Specifically, teachers need to not only focus on emotional awareness but also on thinking and deliberating. However, as the above discussion of the context clarifies, the morality of students has not been objectively measured,

and the ability of students to think and deliberate has not been appropriately examined. Additionally, the Ministry of Education, Culture, Sports, Science and Technology has informed schools and teachers to award grades in moral lessons to students in their report cards. However, the historic shift in moral lessons made it necessary to partially measure morality as well as the thinking and deliberating abilities of students. Therefore, schools need to develop curricula and educational method to match the development of these abilities. It is thus imperative to clarify the development of their abilities to think and deliberate. Although some studies have been conducted on the development of morality in elementary and junior high school students in Japan (Yamagishi, 1995; Sakurai, 2011), research has not been undertaken on the development of the abilities of thinking and deliberating. Of course, recent moral research has been examined not only from cognitive aspects but also from various other aspects, such as neuroscience, emotion, behavior, and personality, in multiple proximity studies. However, this study deals with cognitive aspects in relation to moral education, which Japanese education emphasizes. Accordingly, the present study purposes to examine the communication skills and moral development of elementary and junior high school students.

## **2. BACKGROUND**

### **2.1. History of moral developmental studies in Japan**

The Defining Issues Test developed by Rest (1979) based on Kohlberg's stages of moral development (Kohlberg, 1971) has frequently been used worldwide to measure moral development (Bailey, 2011). It has also been employed to measure moral development in children in Japan (e.g., Yamagishi, 1995; Sakurai, 2011). Studies have evidenced that Japanese children advance through the stages of moral development just as students in other countries. Further, differences in moral development have been observed between males and females from the fifth grade of elementary school up to university (Sakurai, 2011). Sugawara, Nagafusa, Sasaki, Fujisawa, and Azami (2006) also developed the Standard for Public Space Scale, which has been shown to correlate with Kohlberg's stages of moral development (Fujisawa, Azami, Nagafusa, Sugawara, and Sasaki, 2006). This instrument comprises five factors: egocentric, peer standards, regional standards, care for others, and public values. The first factor, egocentric, denotes the pursuance of self-autonomy and personal profit without displaying any concern for the impression created on others. Second, peer standards entail placing importance on aligning with contemporaries. Third, regional standards develop when importance is placed on local community approval. Fourth, care for others is inculcated through the recognition of the importance of concern for those who are unrelated. Finally, public values encompass alignment with public values and societal justice.

Previously conducted studies have revealed that third-year (ninth grade) junior high school students, high school students, and university students are more selfish than first-year (seventh grade) junior high school students (Fujisawa, 2019). Further, 12–15-year-olds (middle school students) in welfare facilities scored higher on the egocentric and peer standards factors than 16–18-year-olds in welfare facilities (high school students). Additionally, both groups registered low scores in the aspects of caring for others and public values (Nagafusa, Sugawara, Sasaki, Fujisawa, & Azami, 2012). Subsequently, Araki and Matsuo (2017) revised the social perspective-taking test corresponding to one of Kohlberg's moral development stages. However, no studies have been conducted on this aspect with elementary and middle school students. Therefore, the present study deemed it meaningful to shed some light on the development of the social perspective-taking ability of elementary and junior high school students.

## 2.2. History of communication skills studies in Japan

As aforementioned, surprisingly few studies have been conducted on the thinking and deliberating abilities of students and on how these skills develop in Japan, apart from Kusumi, Murase, and Takeda's (2016) study on measuring the development of critical thinking attitude in elementary and middle school students. However, Syoji, Adachi, T., Takahashi, K., and Mifune (2012) reviewed studies regarding communication skills scales, revealing the following facets: associative, nonverbal, self-assertive, and emotive. Syoji et al. (2012) noted that communication has been related to several aspects of interpersonal relationships but has rarely been associated with behavioral and thinking elements such as thinking and deliberating. Communication with peers is not directly associated with thinking and deliberating; however, Iida and Ishikuma (2002) found that eighth-grade students scored higher in this domain than ninth graders. These studies have not comprehensively measured the abilities of students to think and deliberate, nor have they examined the development of these capacities. Nonetheless, they appear to indicate that some of these social abilities decline with age. Finally, Ueno and Okada (2006) developed a communication skills scale comprising the following four subscales: listening/speaking, nonverbal skills, assertion, and deliberating. Their study seems to apprehend the thinking and deliberating abilities of students more comprehensively than previous studies. However, the development of these skills in elementary and middle school students is not clarified. Therefore, the present study attempts to illuminate the development of communication skills of students using this scale.

## 3. METHODS

### 3.1. Objective

This empirical study intended to elucidate the development of morality and communication skills in Japanese elementary and junior high school students and apply the obtained results to moral lessons focusing on thinking and deliberation.

### 3.2. Participants

The study included 76 sixth graders in elementary school as well as 120 seventh graders, 153 eighth graders, and 112 ninth graders in middle school, all of whom were enrolled in public schools in the Tokyo metropolitan area of Japan.

### 3.3. Procedure

A questionnaire survey was administered to the participants after obtaining consent from the school principal, the parents of the students, and the students. The classroom teacher for each class administered the questionnaire survey. The questionnaire items were the same for elementary school and junior high school students, but the *kanji* deemed difficult for elementary school students were converted to *hiragana* on the questionnaires. Three school managers checked the survey instrument before it was administered.

### 3.4. Survey content

Araki and Matsuo's (2017) social perspective-taking test developed with reference to Kohlberg was employed to test moral development. Ueno and Okada's (2006) communication skills scale comprising the four factors of listening/speaking, nonverbal skills, assertion, and deliberation, was administered.

### 3.5. Scoring

The manual was employed to calculate the developmental stage score on the social perspective-taking test (Araki & Matsuo, 2017). The higher the score, the higher is the participant's social perspective. The relevant manual was also utilized to calculate each subscale score on the communication skills scale (Ueno & Okada, 2006). High scores in each subscale indicated advanced levels of the particular factor.

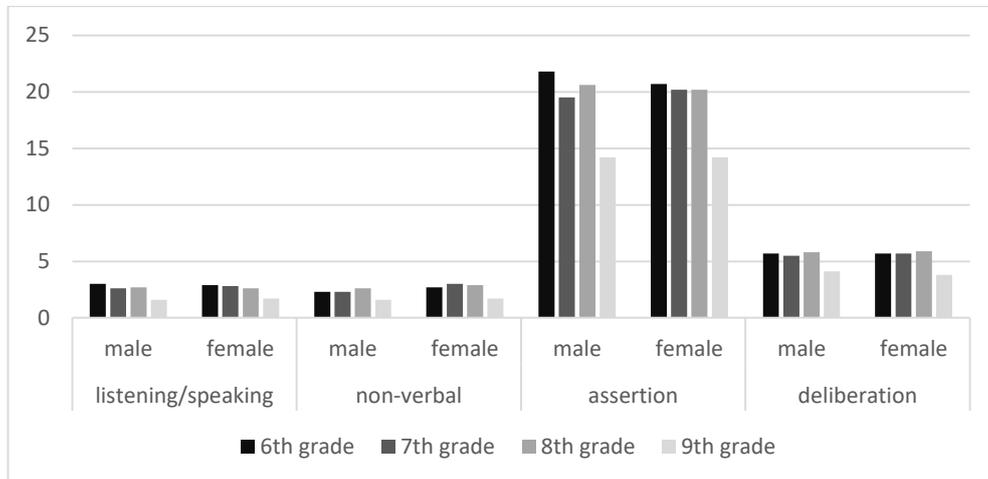
## 4. RESULTS

ANOVA was performed on the data obtained from the participating elementary and junior high school students in Japan to clarify morality, communication skills, and the development of these aspects.

An analysis of variance was performed on each subscale score of communication skills (listening/speaking, nonverbal expression, assertion, and deliberation) as the dependent variable, and grade (sixth, seventh, eighth, and ninth) and gender as two factors.

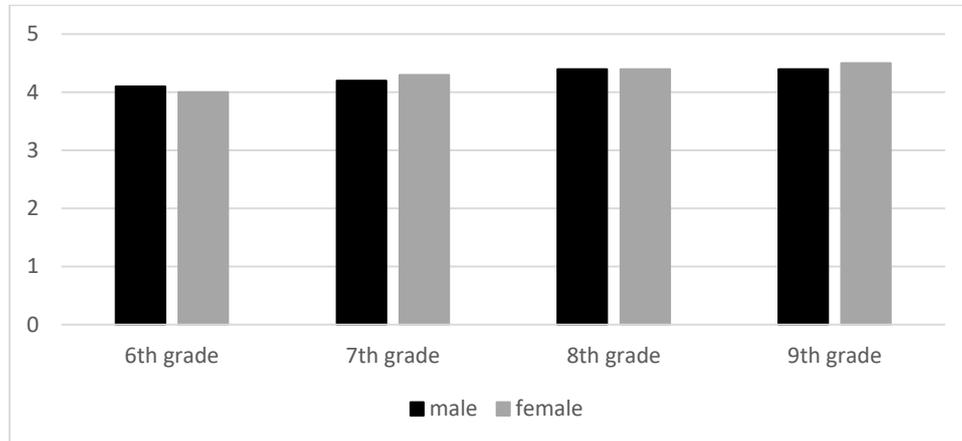
The results revealed all grades registered significant scores (listening/speaking:  $F [3] = 64.4, p < .001$ ; nonverbal:  $F [3] = 43.3, p < .001$ ; assertion:  $F [3] = 78.7, p < .001$ ; deliberation:  $F [3] = 56.6, p < .001$ ) (Figure 1). The interaction between grade and gender was significant for nonverbal communication. No gender differences were found. Listening/speaking, assertion, and deliberation scores were higher for the sixth, seventh, and eighth-grade students than for the ninth-grade participants ( $p < .001$ ) when multiple comparisons were performed using the Bonferroni method for all variables. Nonverbal communication was the only exception.

Figure 1.  
Subscale communication skills scores for each grade.



An analysis of variance was performed with each subscale score of social perspective-taking as the dependent variable and grade and gender as two factors. The results revealed significant scores for all grades ( $F [3] = 11.9, p < .001$ ) (Figure 2). Multiple comparisons were also performed using the Bonferroni method. The social perspective-taking scores were higher in the seventh than in the sixth grade ( $p < .001$ ), higher in ninth than the seventh grade ( $p < .05$ ), higher in the eighth than in the sixth grade ( $p < .001$ ), and higher in the ninth than in the sixth grade ( $p < .001$ ). No gender differences were found.

Figure 2.  
The social perspective-taking test scores.



## 5. DISCUSSION AND CONCLUSION

The present study aimed to clarify the development of morality and communication skills in elementary and junior high school students and suggest educational methods based on the developments. The ability of social perspective-taking was considered an aspect of morality in this study.

The results of this study illuminated that social perspective-taking increases from the sixth grade of elementary school to the ninth grade of middle school, while communication skills decrease. No studies have been conducted to test social perspective-taking in elementary and middle school students using Araki and Matsuo's (2017) revised instrument. The current study is thus significant because it offers basic statistics on this parameter. In addition, the result that social perspective-taking is an ability acquired and developed as children grow older is aligned to the outcomes of previous studies on morality conducted in Japan using other scales and tests. The results suggest that as Japanese children age, they understand varied roles and positions and make social decisions considering these functions and stations.

Conversely, all the subscale scores of communication skills diminished as students became older. This outcome implies that the abilities of listening and speaking, nonverbal expression, assertion, and deliberation decline in students from elementary to junior high school. Iida and Ishikuma's (2002) study on the communication skills of middle school students in Japan also demonstrated that scores decreased from 8th to 9th grade, and the results of the present study partly echo the findings of Iida and Ishikuma (2002).

Moreover, this study offers fresh evidence that the decline in communication skills occurs not just through the three years of middle school but spans the entire stretch from elementary school to the ninth grade of middle school. This result could be perplexing: communication skills declined from elementary school to middle school as varied other thinking abilities developed. The rationale of adolescence could be posited as a possible answer to the anomalous outcome: perhaps middle school students command and can use the aspects of communication skills described in the survey items. However, they could think that the direct displaying of their communication abilities could be awkward for them or

make their communication recipients feel discomfited. Therefore, the scores of communication skills could appear to decline at first glance because direct communication skills are disused as students grow and can consider and imagine the feelings and positions of the other person. For example, the item of communication skills is not “to convey one’s opinion to the other person firmly” (what seems to be superficial), but if items such as “Think about the other person and put up with what you really want to say,” “Hesitate to convey your true intentions so as not to hurt,” and “Don’t bother giving different opinions in order to maintain future relationships with the other person” are prepared, the score will increase with aging. In particular, the fact that the communication skill score decreases and social perspective-taking score increases indicates that the participants think about others with aging.

Thus, “think and deliberate moral” lessons must be designed to tackle the possibility that junior high school students are adolescents who do not like to highlight their communication capacities. For example, the regular imperative to express ideas or think and deliberate on themes in groups could be consciously incorporated into the educational pedagogy and curriculum to make students actively think, deliberate, and articulate their ideas during moral lessons. It must also be recognized that the fact that students refrain from expressing their ideas or shy away from public deliberations at this developmental phase does not imply a lack of thinking and deliberation on the moral lessons imparted in schools. Therefore, worksheets could be employed so students can freely express and summarize their ideas without worrying about the eyes and ears around them. Thinking, deliberating, and accumulating experience are general skills that can be applied to moral lessons as well as myriad other situations. Therefore, teachers should impart moral lessons in manners that can refine these skills while according due consideration to the developmental characteristics of students.

### **5.1. Contribution and future research directions**

The results of this study elucidated that the ability to acquire a social perspective increases with age and that the communication skills of children decrease as they grow from the sixth grade of elementary school to the ninth grade of junior high school. However, participants in younger grades must also be studied to clarify when the ability to acquire social perspectives increases and when communication skills begin decreasing. Additionally, future studies should consider whether the same questionnaire survey should be applied across all ages spanning from junior high school students to participants who are much younger. Nevertheless, the present study contributes to extant knowledge significantly by partially clarifying the development of these social abilities from elementary school to junior high school.

This study also disclosed in part the development of morality in students and the evolution of their ability to think and discuss over a broad age range, an aspect that has not thus far been illuminated. Therefore, it enables the introduction of curricular changes that actively seek to advance the abilities of thinking and deliberation through school lessons taking into account the developmental stage of students.

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## Chapter #11

# INFLUENCE OF FAMILY EDUCATION MODELS ON DEVIANT BEHAVIOURS AMONG TEENAGERS IN VIETNAM

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### ABSTRACT

A predictor of adolescents' developmental outcomes is the model of family education described in terms of parental behaviors. Various parental behaviors were strongly associated with increasing risks of deviant behaviors at school. This study was conducted on 566 adolescents, comprising of 280 males and 286 females, whose age ranging from 16 to 17 years. The results were recorded from two self-reported scales: The Parental Behavior Scale and the Adolescent Deviant Behaviors Checklist. There was a strong negative correlation between school deviant behaviors in adolescents and the parental support model ( $r_{\text{father}} = -.593$ ,  $r_{\text{mother}} = -.613$ ,  $p$ -value  $<.01$ ) as well as a strong, positive correlation between the school deviant behaviors and the parental psychological control model ( $r_{\text{mother}} = .566$ ,  $r_{\text{father}} = .507$ ,  $p$ -value  $<.01$ ). The mother's supportive behaviors were strongly associated with students' deviant behaviors in a negative direction. The supportive behaviors associated with controlling children's behaviors in parents accounted for 50.6% of the variation in children's deviant behaviors in the direction of behavioral reduction. In family education, positive behaviors used by parents such as supportive reinforcements, warmth and moderate control would have a positive impact on the adolescent's behavioral development; conversely, parents' psychological control would be more likely to evoke deviant behaviors among adolescents.

**Keywords:** family educational model, parenting behavior, deviant behavior, adolescents, relationships.

### 1. INTRODUCTION

Over the past 10 years, incidents of deviant behaviors among adolescents in Vietnam have become more serious. Recent studies on deviant behaviors have mostly concentrated on observable misdeeds such as physical violence within the school, sexual violence, spreading of inaccurate information on the internet, conducts that are in violation of laws, abortion, unsafe sex, violation of academic integrity, inappropriate behaviors towards teachers, experiencing with illegal drugs and other substances; furthermore, acts of bullying, insulting, and threatening others in the public domain have escalated to a concerning level (Hoang, 2015; Ministry of Health, 2010). It appears that families, educational institutions and the society are gradually losing control over adolescents and

their deviant behaviors whereas educational intervention from authorized officials to address these problems has demonstrated little to no influence on the status quo.

This study aims to find and clarify the relationship between family education models (modeled by parental behaviors) and deviant behaviors among Vietnamese teenagers, with an emphasis on high school students. Moreover, some independent variables such as age, gender, academic achievements, parental educational level and occupation, were also included to examine their influence on the above relationship and to construct a predictive model for deviant behaviors. It is hypothesized that higher levels of control, regardless of the controlled aspect (psychological or behavioral), will be related to higher levels of deviant behaviors, and that higher level of parental support will be associated with lower levels of problematic behaviors across all categories.

## 2. BACKGROUND

Adolescence as defined on the website of the World Health Organization is the period of development between the stages of a child and those of an adult, ranging from 10 to 19 years of age. It is a period of development filled with an increase in anti-social behaviors and risky behaviors, all of which peak at the end of this period or at the beginning of adulthood (Laird & Frazer, 2019). Despite having certain differences in the concepts of adolescence, all the studies in the world as well as in Vietnam maintain that adolescence is a period of constant changes and growth in various aspects: biological, cognitive, emotional, behavioral and interpersonal relationships (Truong-Thi, 2013). This period of development is mediated by myriad environment-based factors like interpersonal relationships outside the family's sphere; thus, the frequency of deviant behaviors in adolescents also becomes increasingly higher in adolescence than any other age groups (Eisenberg, Damon, & Lerner, 2006).

Deviant behaviors are considered socially unacceptable behaviors, an unusual, abnormal, unexpected behavior, attitude, or opinion highly different from the behaviors, attitudes and opinions of the majority, which can also encompass antisocial behaviors, or dysfunctional, inadequate behaviors (Cheng, 2012; Eisenberg et al., 2006; Giacalone & Greenberg, 1997; Mushtaq & Kausar, 2018; Vardi & Weitz, 2004). It is important to consider factors that decrease (protective factors) or increase (risk factors) the prevalence of such behaviors. There have been multiple studies conducted to further the understanding of these protective and risk factors. Some of the protective factors are related to individual characteristics of the students, the family environment, and the school environment. Protective factors may be social support from people who are important, meaningful and positive to young people, or a feeling of belonging in an environment (Bean, Barber, & Crane, 2006; Burton & Marshall, 2005; Coker & Borders, 2001). A study including more than 18,000 teenagers between grade 7<sup>th</sup> and 12<sup>th</sup> all over the US showed that high levels of perceived social support from family and friends are associated with lower levels of minor adolescent delinquency, and this association was particularly stronger in teenagers whose household belonged to socioeconomically disadvantaged groups (Wight, Botticello, & Aneshensel, 2006). Another research conducted over 505 11<sup>th</sup> and 12<sup>th</sup> graders maintained that participants who reported higher level of perceived support from families experienced fewer depressive symptoms and fewer instances of adolescent of delinquency (Licitra-Kleckler & Waas, 1993). Nevertheless, it must be acknowledged that social support can act in a manner similar to that of a double-edged blade: receiving social support from

the wrong groups, especially immediate peers, can induce an increase in the rate of deviant or delinquent behaviors (Brezina & Azimi, 2018; Kim & Goto, 2000).

Additionally, an important predictor of adolescents' developmental outcomes is a model of education upheld in the family described in terms of parental behaviors. Various patterns of parental behaviors were strongly associated with increasing risks of deviant behaviors at school (Barrera & Li, 1996; Brook, Whiteman, Balka, & Cohen, 1997; Rutter, Giller, & Hagel, 1998). Numerous studies have demonstrated that family guidance had a significant influence on adolescent deviant behaviors, and this could be observed in terms of parental supervision and control (Cheng, 2001; Laser, Luster, & Oshio, 2007). Weak parental involvement and low parental control are related to deviant behaviors in children (Sampson & Laub, 1994). Moreover, a study conducted on 196 children between the age of five and six has shown a rather complicated pattern: whereas a combination of high maternal psychological control and affection produced an increase in problematic behaviors in children both internally and externally, a combination of high maternal behavioral control and low psychological control was associated with lower levels of external problematic behaviors (Aunola & Nurmi, 2005). Another research in a sample of 600 Flemish families emphasized the importance of parentings styles and child outcomes (Kuppens & Ceulemans, 2019). The research constructed four different parenting styles based on two dimensions, which are parental support and behavioral control. It was determined that authoritative parenting styles produced the most favorable outcomes whereas the opposite outcomes are discernible with authoritarian parenting styles. Some Vietnamese authors have shown that the conflict between parents and children was often related to discipline and execution of discipline. Children's difficulties in accepting and obeying discipline are often related to parental pressure. According to these authors, in families where parents and children have intense conflicts, parents have enforced an authoritarian policy, controlled their children in psychological and behavioral dimensions too tightly (Nguyen-Thi, 2014; Le, 2019).

In Vietnamese culture, parenting is greatly influenced by three traditional religions (Buddhism, Confucianism and Taoism), ancestor cult and collectivistic values (Luong, 1992/2005; Tran, 2007). The attachment among family members is also a protective factor against deviant behaviors (Licitra-Kleckler & Waas, 1993). In contrast, the majority of adolescents who have engaged in risky behavior refer to causes such as family conflict and lack of harmony with parents.

### **3. METHODS**

#### **3.1. Participants**

This research was conducted on 566 students in Vietnamese high schools, including 280 males (49.5%) and 286 females (50.5%) of grade 11<sup>th</sup> (n = 405) and 12<sup>th</sup> (n = 161), whose age between 16 and 17 years. The data was collected between October 2019 and September 2020. The majority of participants (88.3%) came from intact families. The level of students' academic achievement varied: around 7.2% of the participants reported a good level (n = 41), 10.4% of the responses were at weak and average level (n = 59), and 82.3% of them were fairly good (n = 466). The research adopted a cross-sectional model with a convenience sampling method.

### 3.2. Measures

*Parental Behaviors Scale (Family Education)* is a 25-item scale, including 23 items proposed by Barber, Stolz, Olsen, Collins, and Burchinal (2005), and two items built by the research team. This 25-item scale was a self-reported measure which is comprised of three subscales: Parental Support, Parental Psychological Control and Parental Behavioral Control. The Cronbach's alpha coefficient of the whole scale for the father is: .71 and for the mother is .65. *Parental Support* was measured using the 10-item subscale from the revised Child Report of Parent Behavior Inventory (Schaefer, 1965; Schuldermann & Schuldermann, 1988). The Cronbach's alpha coefficient of this sub-scale for fathers is .85 and for mothers is .73. The *Parental Psychological Control* sub-scale consisted of eight items extracted from the Psychological Control Scale-Youth Self-Report (PCS-YSR) with two items being constructed to adjust to the cultural characteristics of Vietnamese students in high school (Barber, 1996). The Cronbach's alpha coefficient of this sub-scale for the father is .77 and for the mother is .83. *Parental Behavioral Control* was estimated using a 5-item scale that was employed in family research with adolescents (Barber et al., 2005). The Cronbach's alpha coefficient of the sub-scale in the father is: .71 and in the mother is .66.

*Adolescent-Reported Deviant Behaviors Checklist* enumerated 37 problematic behaviors in Vietnamese high school students. To design a scale that adapted to the sociocultural, educational and political characteristics in Vietnam, the research team has consulted, synthesized and opted for 27 items in international self-report delinquency studies (Elliot, Huizinga & Ageton, 1980; Junger-Tas, Terlouw, & Klein, 1994; Ni He & Marshall, 2012). The remaining 10 items were designed by the research team based on the behavioral rules proposed by the Ministry of Education and Training in Vietnam, in consultation with head teachers and students about problematic behaviors occurring at school. This scale can be divided into four sub-scales, including 17 items measuring violation of learning rules and school rules, of which Cronbach's alpha is .91, eight items reporting violation of school conducts, of which Cronbach's alpha measured .87, seven items indicating bullying behaviors at school, of which Cronbach's alpha was .87, and five items reporting behaviors related to sexuality, of which Cronbach's alpha was reported at .85.

### 3.3. Data analyses and statistical methods

Dimensions of parenting behaviors and groups of deviant behaviors were examined and tested by confirmatory factor analysis. Accordingly, the normal variations were extracted on the number of explained variances, therefore, a standard variable would be the same as the one that appeared in the confirmatory factor analysis. The loading factor was 0.40. To assess the overall relationship between parenting behaviors and deviant behaviors in adolescents, the team research used standard correlation analyses. Linear regression model with Enter statistics was used to analyze the variation of school deviant behaviors in adolescents when having the impact of parental behavior factors. Missing values were excluded from the analyses.

## 4. RESULTS

### 4.1. Evaluations of school deviant behaviors in adolescents

Independent sample t-tests of school deviant behavior groups between boys and girls showed that boys had higher levels of school deviant behaviors than girls in all four groups of school deviant behaviors (see *Table 1*).

*Table 1.*  
*Comparison of the average scores of school deviant behaviors in high school students.*

Groups of school deviant behaviors	Boys		Girls	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Violation of learning rules and school rules $t_{(566)}=3.96, p=.000^{***}$	2.06	0.73	1.87	0.37
School conducts $t_{(566)}=4.95, p=.000^{***}$	1.89	0.85	1.62	0.35
Bullying behaviors at school $t_{(566)}=4.66, p=.000^{***}$	1.73	0.78	1.48	0.37
Behavior related to sexuality $t_{(566)}=6.364, p=.000^{***}$	1.66	0.81	1.32	0.33

\*\*\* $p < .001$

It can be easily observed that most deviant behaviors at school violated of learning rules and school rules. In other words, deviant behaviors frequently revolved around issues associated with a student's consciousness, attitudes, responsibilities and obligations.

Comparing groups of students with different school deviant behaviors using the independent sample t-tests and the one-way ANOVA tests, the research team noted that private school students demonstrated more school-related deviant behaviors than public school students did in all four categories of deviant behaviors. Students with average academic performance had a higher level of deviant behaviors than the groups of students with good and excellent performance did, especially with violations of learning rules and violations of school conducts. The less time parents spent with their children (one hour or less), the higher the student's frequency of deviant behaviors was, and vice versa. The time that parents spent with their children can be viewed as a demonstration of a family's quality of life, parents' concerns for their children and the feelings of members of their family. Furthermore, parental marital status also influenced the degree of deviant behaviors in high school students. For intact families, the level of school deviation among students was lower than that of students with separated or divorced parents. With separated or divorced children, children did not have the same amount of care and supervision compared to children with intact families, which could allow for more deviant behaviors. Additionally, the emotional burden that children had to suffer from living in an incomplete family can trigger the occurrence of their deviant behaviors as a coping mechanism.

**4.2. Parenting behavior models reported by adolescents**

*Table 2.*  
*Comparison of the average scores for all dimensions of the parenting behaviors reported by students.*

	T-value = 2						
	<i>t</i>	<i>df</i>	<i>Sig. (2-tailed)</i>	<i>Mean</i>	<i>M.D</i>	<i>95% C.I</i>	
						-	+
Supportive Father	-9.417	565	0.00**	1.78	-.21692	-.2622	-.1717
Psychological control of Father	.099	565	0.92	2.00	.00199	-.0373	.0413
Behaviora control of Father	-13.787	565	0.00**	1.66	-.33834	-.3865	-.2901
Supportive Mother	2.030	565	0.04*	2.04	.04527	.0015	.0891
Psychological control of Mother	3.739	565	0.00**	2.08	.07827	.0372	.1194
Behavioral control of Mother	-13.751	565	0.00**	1.70	-.31625	-.3614	-.2711

\*p <.05; \*\*p <.01

The data in *Table 2* was analyzed using the one sample t-test with T value = 2. The results showed that among the three dimensions of parenting behaviors reported by high school students, the psychological control aspect was still the most commonly observed characteristic in parents, followed by the parental support aspect, and lastly the behavioral control. One noteworthy observation is that the students’ assessment of this aspect for mothers was quite far higher than their assessment of this aspect for fathers.

The results on the manifest levels of parenting behaviors showed that, among the three mentioned groups, the psychological control dimension was “high” (strong/tight), and it was the most dominant trait. Moreover, the difference between fathers (53.4%) and mothers (67.3%) was quite noticeable. The second huge difference was observed in the dimension of strong parental support, of which rate were 64.8% and 41.7% for mothers and fathers respectively. As many as two-thirds of the students participated in the survey rated their parents as having loose behavioral control, and only 32.3% viewed their fathers and 35.9% viewed their mothers as exhibiting strict behavioral control.

*Table 3.*  
*Comparison of evaluations of parental supportive behaviors between male and female students.*

	<i>Supportive Father</i>		<i>Supportive Mother</i>	
	<i>M(SD)</i>	<i>t, F, df, p</i>	<i>M(SD)</i>	<i>t, F, df, p</i>
Girls	1.84(.53)	t(566)=-2.841, p=.005**	2.15(.43)	t(566)=-4.901, p=.000***
Boys	1.71(.55)		1.93(.58)	

\*\*p <.01; \*\*\*p <.001

The results of the t-tests in *Table 3* showed that both male and female students rated their mothers as demonstrating more supportive behaviors than their fathers do: female students reported the levels of behavioral support from their fathers at 1.84 and their mothers at 2.15 whereas these levels reported by male students are 1.71 and 1.93 for fathers and mothers respectively. The fact that children evaluated the mother's behavioral aspects (strong supportive behavior and tight psychological control) higher than those of fathers reflected the expected traditional values of paternal and maternal roles in Vietnamese families in which the presence and influence of the mother dominate in the early stages of development of the child.

Furthermore, 11<sup>th</sup> grade students rated supportive behaviors observed in their parents ( $M_{father}=1.86$ ,  $M_{mother}=2.18$ ) more positively than 12<sup>th</sup> grade students did ( $M_{father}=1.58$ ,  $M_{mother}=1.69$ ), with significance  $p$ -value recorded at less than 0.001. In other words, the older the students became, the less likely they felt supported by their parents.

Moreover, students with weak and average academic performance often received very little support and very high psychological control from their parents. In contrast, students with good or fairly good academic performance reported receiving more support from parents but also higher behavioral control from them than the group of students with weak and average academic performance.

Separated and divorced parents were rated as showing lower supportive levels and lower levels of control over their children's behaviors ( $M$  ranged from 1.2 to 1.46); however, they were reported as exhibiting higher levels of psychological control ( $M$  ranged from 2.44 to 2.58). Students who were dissatisfied with their families often rated their parents' psychological control as very high ( $M_{father}=2.29$ ,  $M_{mother}=2.44$ ), while their parents' support and behavioral control were rated as relatively low.

### **4.3. Correlation between school deviant behaviors in adolescents and parenting behaviors**

Not asserting that parental behavior plays a unique role in the development of children, Born (2003) demonstrated that inappropriate parental behaviors had an intimate, positive correlation with deviant behaviors in children.

The results in *Table 4* emphasized three main points. First and foremost, there was a strong, negative correlation between school deviant behaviors in general and parental support observed in both fathers ( $r=-.593$ ) and mothers ( $r=-.613$ ). Secondly, there was a strong positive correlation between school deviant behaviors and parental psychological control group: the correlation coefficients for mother and father were .566 and .507 respectively. These correlations were observed at a statistically significant level, implying that in a family, when a parent, especially the mother, tried to control and manipulate the child psychologically, the risk of the child behaving in an inappropriate way at school increased. Lastly, it can be observed that the correlation between school deviant behaviors and parental behavioral control group was negative for both fathers ( $r=-.420$ ) and mothers ( $r=-.450$ ).

*Table 4.*  
*Correlation coefficient between school deviant behaviors in general and parenting behaviours.*

<i>Dimensions of parenting behaviors (n=566)</i>	<i>School deviant behaviors in students</i>
Supportive Father	-.593**
Psychological control of Father	.507**
Behavioral control of Father	-.420**
Supportive Mother	-.613**
Psychological control of Mother	.566**
Behavioral control of Mother	-.450**

\*\* p <.01

The different categories of deviant behaviors had quite strong correlations with the three dimensions of parenting behaviors. The parental support dimension had strong, negative correlations with all four categories of school deviant behaviors in high school students, with the correlations observed in the cases of mothers being higher than those observed in the cases of fathers. On the other hand, the parental psychological control dimension had statistically significant positive correlations with all four groups of deviant behaviors at school; nevertheless, these correlation levels for both fathers and for mothers were quite similar. Since the parental psychological control was positively and quite strongly correlated with all four groups of deviant behaviors in high school students, with the *r* coefficient ranging from .39 to .46, it can be maintained that if either parent utilizes parenting strategies that involved lots of psychologically controlling tactics, it is more likely that more deviant behaviors would be observed in the child.

#### **4.4. Prediction of the influence of parenting behaviors on school deviant behaviors**

*Table 5.*  
*Linear regression analysis: Impacts of parental behaviors on deviant behaviors in teenagers.*

Dependent variable: School deviant behaviors in students	Unstandardized B	Standardized Coefficients Beta	t	Sig.	95% C.I.	
					-	+
Supportive Mother	-.044	-.319	-9.886	.000	-.053	-.036
Supportive Father	-.029	-.239	-7.669	.000	-.036	-.022
Behavioral control of Father	-.017	-.075	-2.276	.023	-.031	-.002
Behavioral control of Mother	-.017	-.071	-2.167	.031	-.032	-.002

Psychological control of Father	.024	.180	5.771	.000	.016	.032
Psychological control of Mother	.034	.280	8.701	.000	.026	.041
R	.806					
R <sup>2</sup>	.650					
Adjusted R <sup>2</sup>	.646					
F Change	173.109					
Durbin-Watson	1.733					

With  $R=.806$ ,  $R^2=.650$ , adjusted  $R^2=.646$ ,  $F\ change=173.109$ ,  $p=.000$ , it can be observed that dimensions of parenting behaviors explained 64.6% of the variation in school deviant behaviors, with supportive behaviors of mothers most strongly predicted the change in the students' deviant behaviors, followed by the father's supportive behaviors, both of which were negatively correlated with adolescent deviant behaviors at school (Table 5). The behaviors associated with controlling children's behaviors in parents accounted for 50.6% of the variation in children's deviant behaviors in the direction of behavioral reduction, which signifies great importance imbued in this dimension of parenting.

On the other hand, the mother's psychological control predicted the second most changes in the students' deviant behaviors, followed by the father's psychological control; nevertheless, both of these facets were positively correlated with deviant behaviors. Specifically, parental psychological control explained the increase of 37.1% of students' deviant behaviors. The more tightly parents controlled their children mentally, the more deviant behaviors were observed. Though accounting for much less variation in students' deviant behaviors (13.5% less), it is undeniable that psychological control is an important aspect in constructing the model.

## 5. FUTURE RESEARCH DIRECTIONS

This research radiates great potential for further studies. Future research can include other factors to construct one that predicts more variation in adolescent delinquent behaviors. In addition to that, cultural specifics can be investigated to determine if the findings in this study can be replicated in other culture where the mother does not dominate the early stages of development. Furthermore, future studies can expand the age range and determine whether the influence of parenting behaviors endures to adulthood or terminates at the end of adolescent. Numerous opportunities to broaden the knowledge determined in this study are available.

One essential question that our study raises is the importance of the father and mother separately. In Vietnamese folk culture, when it comes to family education, people often refer to the idiom: "A child is spoiled by his mother, a grandchild is spoiled by his grandmother". However, the power in the Vietnamese family dynamic belong to the man, because they are responsible for ensuring financial stability, as well as economic holders in the family (land, farmland, and property are all owned by the father and "only pass down to the son" – a product of the patriarchy in the past) (Nguyen, 1989). Thus, even if the responsibility of raising and educating children belongs to the women, does the father actually have less significance in parent-child's relationships than the mother does?

Another observation worth considering was that students valued their mothers both extremely supportive and psychologically controlling at the same time. The supportive behavior was considered as the most ideal of the three types of parenting behaviors. Mothers' supportive behaviors had an effective role in controlling, eliminating and minimizing the level of deviation more than that of fathers. In other words, even when the mother is being supportive, psychological control is still implied within the actions. Besides, the parental control of the child's behaviors was inversely correlated with all four groups of deviant behaviors, in which the father's supervision had more impact on the child's behaviors than that of the mother. More research can be done to see the overlap between supportive behaviors and psychological control and how these two elements interact.

Future research can also investigate the combination of weak supportive behaviors and high psychological controlling behaviors. Theoretically, this combination should induce very high levels of adolescent deviant behaviors; nevertheless, research in this would undoubtedly provide evidence regarding the interaction of supportive behaviors and psychological control, allowing practitioners to understand and manipulate these elements to provide the best educational methods.

## 6. CONCLUSION

The results of our studies partially confirmed our hypothesis: it is true that parental support negatively correlates with deviant behaviors whereas parental psychological control positively correlates with these behaviors; nonetheless, the same case does not hold true regarding parental behavioral control: although the strengths of the correlations were not extremely high, parental behavioral control still had a negative association with adolescent deviant behaviors, meaning parents who exerted more behavioral control would be more likely to have children with fewer deviant behaviors. Our model has also indicated that the three aforementioned dimensions of parenting behaviors can account for the majority of adolescent deviant behaviors at school (64.6%), and among those three dimensions, parental support holds the highest significant as it explains approximately half of the model, followed by psychological control which explains 37.1% of the model.

These findings maintain that there might exist contradictory effects regarding the two dimensions of parental control over children. However, these results are undoubtedly not expected. The correlations found in this study are similar to the ones found in the study conducted in 2005 by Kaisa Aunola and Jari-Erik Nurmi. In their study, a combination of high behavioral control and low psychological control from mothers appeared to indicate lower levels of adolescent delinquency (Aunola & Nurmi, 2005). Moreover, our results further contribute to the wealth of literature surrounding the benefits of strong parental support. It has been shown in numerous studies that if a child perceives that he or she receives a lot of support from his or her parents, he or she is less likely to commit actions that are socially inappropriate (Licita-Kleckler & Waas, 1993). Though our study does not factor socioeconomic status into calculations of the correlations as observed in Wight, Botticello, and Aneshensel's study, it can still be reasonably maintained that social support from parents can greatly benefit the children, making them less likely to engage in socially improper behaviors at school (Wight et al. 2006). In the case of Kuppens and Ceulemans' study, our findings also confirm that parental support is related to lower levels of deviant behaviors; nonetheless, our results contradicted their conclusion that high behavioral control is associated with more deviant behaviors, as the correlation in our research

between these two factors is negative and not positive. More research might be required in order to clarify this relationship. Our conclusion that parental support plays the most important role in reducing deviant behaviors has been indicated in past research. In a study conducted in 2014, it was maintained that parental support had a direct and independent effect on reducing adolescent delinquency, deterring four out of the six listed risky behaviors (Kleuens & Hall, 2014). Additionally, our results that a combination of parental support would produce a lower level of adolescent deviant behaviors at school are reinforced by the findings in previous literature (De Kemp, Scholte, Overbeek, & Engels, 2006).

One limitation of our study is that the findings in this study does not demonstrate a causal relationship. Furthermore, it can be reasonably assumed that adolescent deviant behaviors are the results of multiple acting factors, and parenting behaviors, though important, do not account for all the incidents. As it is established by our model, parental support, parental psychological control and parental behavioral control can only illustrate around 64.6% of the model, leaving 35.4% unexplained. This is more than a third of the variation, which is relatively significant. Other factors like cultural specifics, socioeconomic status, and education of parents can also exert great influence on whether a child would engage in socially improper behaviors. Hence, a more comprehensive design is much required in order to produce a more detailed causal relationship and an effectively working model regarding parental behaviors and adolescent delinquency regarding some of the other major influences. At the same time, in the context of the current COVID-19 pandemic in Vietnam, a post-COVID-19 assessment study will be able to help the research team get a different view of this relationship between parental behaviors and school deviant behaviors in adolescents.

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## Chapter #12

### THE EFFECTIVENESS OF DRUG USE PREVENTION PROGRAMS ON SUBSTANCE USE AMONG SLOVAK SCHOOLCHILDREN

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#### ABSTRACT

The objective of the study is to examine the long-term effectiveness of the school-based drug prevention programs Unplugged and Unplugged2 supplemented with n-Prevention booster sessions on reported alcohol use(AU), smoking and the cumulative index(CI) of AU and smoking. In Unplugged, a sample of 744(M=12.5;58.72%girls) was collected before program implementation(T1) and 12months later(T3). In Unplugged2, a sample of 408(M=14.48;51.96%girls) was collected before program implementation(T1), immediately after implementation(T2) and 12months later(T3). In Unplugged, the sample was divided into control and experimental groups while Unplugged2 was split into control, experimental and experimental groups with n-Prevention, a pre-test or without a pre-test. Binary logistic regressions were used to analyze the data at every measurement point. There was no significant effect of Unplugged and Unplugged2 with a pre-test. However, gender was significantly associated with smoking and girls were more likely to report smoking than boys. Unplugged2 without a pre-test was significantly associated with AU and CI at T3. The experimental and experimental groups with n-Prevention were less likely to report AU. The experimental group with n-Prevention was less likely to report AU and/or smoke. There was no significant moderation effect. The results show the effectiveness of Unplugged2 without a pre-test design, especially with booster sessions.

*Keywords:* alcohol use, smoking, drug prevention, schoolchildren.

#### 1. INTRODUCTION

Early adolescence is a crucial period for using drugs which can continue into adulthood and dramatically increase lifelong substance use (Jordan & Andersen, 2017). Alcohol is the most commonly used substance among adolescents. It is often referred to as problem drinking in the research and includes the frequent consumption of alcohol as well as episodic, higher quantity consumption. This can cause adolescents difficulties such as hangovers, missing school, causing damage or being arrested for anti-social behaviour. Alcohol use during adolescence is associated with the increased likelihood of engaging in other risky behaviours including the use of other illicit drugs and risky sexual behaviour (Hutchinson, Teague, Champion, Essau, & Newton, 2020). Across Europe, the majority of students report having consumed alcohol at least once in their lifetime. In Slovakia, 54% of students reported consuming alcohol during the past 30 days.

In addition, 46,6 % of the Slovak students who reported drinking in the past 30 days had engaged in heavy episodic drinking while 14% of students reported having been intoxicated in the past 30 days. (ESPAD, 2019). Moreover, schoolchildren who start drinking before the age of 14 are four times more likely to become alcohol dependent at some point in their life compared to those who first consume alcohol at the age of 20 or older (Agabio et. al., 2015). According Gabrhelík et. al. (2012a) smoking often starts in adolescence and negatively influences lung function including respiration, decreases physical fitness and increases the risk of developing cardiovascular diseases later in life. In Slovakia, 58% had ever smoked cigarettes at least once in their lives and 29% reported having smoked in the past 30 days. (ESPAD, 2019).

Despite primary prevention generally being considered one of the most appropriate strategies, Faggiano, Richardson, Bohrn, Galanti, and EU-Dap Study Group (2007) have pointed out that empirical evidence has shown the insufficient effectiveness of school programs. Schools are the ideal location for promoting health services among young people. School-based preventive programs comprise educational programs, psychosocial programs, or a combination of both, with the objective of reducing drug consumption. Psychosocial interventions are aimed at developing the skills to reduce this risk whereas educational interventions aim increase awareness of the potential dangers of using drugs. Furthermore, Unplugged program appears to be the prevention project with the best evidence of effectiveness in European studies (Agabio et. al., 2015). In Slovakia, evaluating the effectiveness of drug substance prevention programs and data-based drug use prevention among schoolchildren is still lacking (Gabrhelík et al., 2014). However, the implementation of the program Unplugged amongst Slovak schoolchildren is the beginning of this (Orosová, Gajdošová, Bačíková-Šléšková, Benka, & Bavoľár, 2020).

Gender differences have been found to be important factors in the effectiveness of school-based drug use prevention programs. This is a factor that could cast light on the psychological mechanism of the program effect (Vigna-Taglianti et al., 2009). Alcohol use among boys is generally higher than that among girls. However, gender differences in alcohol use rates appear to be diminishing, particularly in relation to weekly drinking and intoxication on more than one occasion (WHO/HBSC, 2016). According ESPAD (2019) the average prevalence of smoking is also higher among boys than girls.

Thus, the current study aims to explore the effectiveness of prevention programs over long-term periods.

## **2. OBJECTIVES**

The objective of the study is to examine the long-term effectiveness of the school-based drug prevention programs Unplugged and Unplugged2 supplemented with n-Prevention booster sessions on reported alcohol use, reported smoking and the cumulative index(CI) of reported alcohol use and reported smoking in the past 30 days among Slovak schoolchildren.

## **3. DESIGN**

The universal substance prevention program Unplugged is part of the EU-DAP “The European Drug Addiction Prevention Trial” project. Unplugged is designed for schoolchildren aged 12 to 14 and consists of 12 lessons. The program is based on two principles. The first principle is the Comprehensive social influence model where the purpose is to build specific skills to manage social impact and deconstruct normative beliefs

(Kreft et al., 2009). The second principle is the Knowledge-attitude-behaviour model which is focused on providing information about drugs and their consequences. A combination of these two principles has an impact on the use of alcohol, tobacco and illicit drugs (Širůčková et al., 2012). The goal of Unplugged is to reduce the number of schoolchildren who start using addictive substances and delay the first contact with drugs as well as delaying the transition from experimentation to regular use (Charvát, Jurystová, & Gabrhelík, 2012). In 2013/2014, Unplugged was implemented over 12 consecutive weeks in Slovak primary schools. The program was carried out by teachers, special educators and psychologists who had undergone a training course. In 2017/2018, Unplugged 2 (a follow-up to Unplugged) with a Solomon design was implemented by each school over 6 months. In addition, Unplugged2 was extended by the follow-up program “n-Prevention”. This is a series of so-called “booster sessions”, which aim to contribute to the effectiveness of the program. They consist of a series of 4 lectures focused on social norms and normative beliefs, refusal skills, differences between genders and the current neurological knowledge that provides information on the influence of drug use on brain functioning (Gabhelík et. al., 2014). This study has an experimental design.

*Table 1.*  
*Group design of Unplugged and Solomon four design Unplugged 2with n-Prevention.*

					Data collected:
<b>Experimental group (EG) in Unplugged</b>	Pre-test	Unplugged	-	Post-test	before program implementation(T1), 12months later(T3)
<b>Control group (CG) in Unplugged</b>	Pre-test	-	-	Post-test	before program implementation(T1), 12months later(T3)
<b>Experimental group 2 (EG2) in Unplugged 2</b>	Pre-test	Unplugged2	-	Post-test	before program implementation(T1), 12months later(T3)
<b>Experimental group (EG*2) in Unplugged 2</b>	Pre-test	Unplugged2	n-Prevention	Post-test	before program implementation(T1), 12months later(T3)
<b>Control group (CG2) in Unplugged 2</b>	Pre-test	-	-	Post-test	before program implementation(T1), 12months later(T3)
<b>Experimental group (EG3) in Unplugged 2</b>	-	Unplugged2	-	Post-test	immediately after program implementation(T2), 12months later(T3)
<b>Experimental group (EG*3) in Unplugged 2</b>	-	Unplugged2	n-Prevention	Post-test	immediately after program implementation(T2), 12months later(T3)
<b>Control group (CG3) in Unplugged 2</b>	-	-	-	Post-test	immediately after program implementation(T2), 2months later(T3)

## **4. METHODS**

### **4.1. Sample and procedure**

In Unplugged, the sample consisted of 744 (M = 12.5 years; 58% girls) Slovak schoolchildren. In Unplugged2 the sample consisted of 408 (M = 14.48 years; 51,96% girls) Slovak schoolchildren. For more details about the data collected see Table 1.

### **4.2. Measures**

The schoolchildren were asked to fill in a paper version of an anonymous questionnaire administrated in class. Reported alcohol use and reported smoking in the past 30 days were explored by the questions: “On how many occasions (if any) have you had an alcoholic beverage to drink during the last 30 days?”, and “On how many occasions (if any) have you smoked a cigarette during the last 30 days?” The possible answers were: 0, 1-2, 3-5, 6-9, 10-19, 20-39, 40 or more. In Unplugged 2, alcohol and smoking were also explored by the questions: “On how many occasions (if any) have you had an alcoholic beverage to drink during the last 30 days?” and “On how many occasions (if any) have you smoked a cigarette during the last 30 days?” The possible answers were: 0, 1, 2-4, 5 or more. Reported alcohol use, reported smoking and the cumulative index of reported alcohol use and smoking was dichotomized: 0-not used, 1- alcohol use, smoking or both.

### **4.3. Statistical analyses**

Binary logistic regression was used to analyze the data at every measurement point. Reported alcohol use, reported smoking and the cumulative index of reported alcohol use and reported smoking in the past 30 days served as the dependent variable while participation in Unplugged or Unplugged2 served as the independent variable. The effect of gender was analyzed as an independent variable and the moderation effect of gender was also explored. Reported alcohol use, reported smoking and the cumulative index of reported alcohol use and reported smoking at T1 in Unplugged and Unplugged 2 with a pre-test, and reported alcohol use, reported smoking and the cumulative index of reported alcohol use and smoking at T2 in Unplugged 2 without a pre-test were used as the control variables. A Chi-square test was carried out to assess the gender and group differences in all variables. Data was analyzed with SPSS version 23.

## **5. RESULTS**

The descriptive analyses for the experimental (EG) and the control group (CG) at T1 and at T3 and gender differences at T3 in Unplugged are presented in Tables 2 and 3. Generally, the number of alcohol users was higher in comparison to smokers in the experimental (EG) as well as in the control groups (CG). There were no significant differences between boys and girls in reported alcohol use, smoking and the cumulative index of reported alcohol use and smoking.

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*Table 2.*  
*Differences between the control group and the experimental group in alcohol use, smoking and the cumulative index of alcohol use and smoking during the last 30 days at T1 and at T3 in Unplugged.*

		CG		EG		$\chi^2$
		N	%	N	%	
<b>AU at T1</b>	Not used	554	90.7	512	85.8	6.549
	Used	57	9.3	85	14.2	
<b>Smoking at T1</b>	Not used	590	97.0	567	98.3	1.438
	Used	18	3.0	10	1.7	
<b>CI at T1</b>	Not used	534	90.4	485	86.6	3.618
	Used	57	9.6	75	13.4	
<b>AU at T3</b>	Not used	363	84.2	342	82.0	0.588
	Used	68	15.8	75	18.0	
<b>Smoking at T3</b>	Not used	388	90.7	381	91.1	0.017
	Used	40	9.3	37	8.9	
<b>CI at T3</b>	Not used	337	80.2	321	78.3	0.478
	Used	83	19.8	89	21.7	

Note: EG= experimental group; CG= control group; AU= alcohol use, CI = cumulative index of alcohol use and smoking

*Table 3.*  
*Differences between boys and the girls in alcohol use, smoking and the cumulative index of alcohol use and smoking during the last 30 days at T3 in Unplugged.*

		CG				$\chi^2$	EG				$\chi^2$
		Boys		Girls			Boys		Girls		
		N	%	N	%		N	%	N	%	
<b>AU</b>	Not used	139	79.0	198	81.1	0.182	149	82.3	19	81.8	0.00
	Used	37	21.0	46	18.9		32	17.7	43	18.2	
<b>Smoking</b>	Not used	167	91.3	221	90.2	0.041	160	89.4	22	92.5	0.85
	Used	16	8.7	24	9.8		19	10.6	18	7.5	
<b>CI</b>	Not used	373	77.6	385	80.5	0.927	134	76.1	18	79.9	0.63
	Used	79	22.4	83	19.5		42	23.9	47	20.1	

Note: CG= control group; EG= experimental group; AU= alcohol use, CI = cumulative index of alcohol use and smoking

In Unplugged2, the number of alcohol users was also higher in comparison to smokers in the control group (CG2), the experimental group (EG2), the experimental group with n-Prevention (EG\*2) at T1 and at T3 in Unplugged 2 with a pre-test, as well as in the control group (CG3), the experimental group (EG3) and in the experimental group with n-Prevention (EG\*3) at T2 and T3 in Unplugged without a pre-test. For more details see Tables 4 and 5. As shown in Table 5, a chi-square test for independence indicated a significant association between the control (CG3), experimental (EG3) and experimental group with n-Prevention (EG\*3) in Unplugged 2 without a pre-test and alcohol use,  $\chi^2 (2, n = 506) = 7.87, p = .02, \text{Cramer's } V = .02$ . The schoolchildren in the experimental (30.5%) and experimental group with n-Prevention (22%) were less likely to report alcohol use in comparison to the control group (35.2%).

Table 4.

*Differences between the control group, the experimental group and the experimental group with n-Prevention in alcohol use, smoking and the cumulative index of alcohol use and smoking during the last 30 days at T1 and at T3 in Unplugged 2 with a pre-test.*

		CG2		EG2		EG*2		$\chi^2$
		N	%	N	%	N	%	
<b>AU at T1</b>	Not used	210	83.0	128	80.0	115	74.2	4.629
	Used	43	17.0	32	20.0	40	25.8	
<b>Smoking at T1</b>	Not used	248	96.9	151	93.8	145	92.9	3.726
	Used	8	3.1	10	6.2	11	7.1	
<b>CI at T1</b>	Not used	204	81.0	124	77.5	112	72.3	4.175
	Used	48	19.0	36	22.5	43	27.7	
<b>AU at T3</b>	Not used	169	69.8	100	68.5	115	72.8	0.721
	Used	73	30.2	46	31.5	43	27.2	
<b>Smoking at T3</b>	Not used	198	81.5	124	84.9	126	78.8	1.947
	Used	45	18.5	22	15.1	34	21.3	
<b>CI at T3</b>	Not used	156	64.5	93	63.7	105	66.5	0.279
	Used	86	35.5	53	21.7	53	33.5	

Note: EG2= experimental group; EG\*2= experimental group with n-Prevention; CG2= control group; AU= alcohol use, CI= cumulative index of alcohol use and smoking

*Table 5.*  
*Differences between the control group, the experimental group and the experimental group with n-Prevention in alcohol use, smoking and the cumulative index of alcohol use and smoking during the last 30 days at T2 and at T3 in Unplugged 2 without a pre-test.*

		CG3		EG3		EG*3		$\chi^2$
		N	%	N	%	N	%	
<b>AU at T2</b>	Not used	178	79.5	112	77.2	128	72.3	2.866
	Used	46	20.5	33	22.8	49	27.7	
<b>Smoking at T2</b>	Not used	203	89.8	131	89.7	157	88.2	0.316
	Used	23	10.2	15	10.3	21	11.8	
<b>CI at T2</b>	Not used	174	77.7	103	71.0	123	69.9	3.628
	Used	50	22.3	42	29.0	53	30.1	
<b>AU at T3</b>	Not used	136	64.8	89	69.5	131	78.0	<b>7.870*</b>
	Used	74	35.2	39	30.5	37	22.0	
<b>Smoking at T3</b>	Not used	179	84.8	102	79.1	145	86.3	3.079
	Used	32	15.2	27	20.9	23	13.7	
<b>CI at T3</b>	Not used	130	61.9	80	62.5	122	73.1	5.935
	Used	80	38.1	48	37.5	45	26.9	

Note: EG3= experimental group; EG\*3= experimental group with n-Prevention; CG3= control group; AU= alcohol use, CI= cumulative index of alcohol use and smoking, \*= p<0.05

There were no significant differences found between the boys and girls in reported alcohol use, smoking and the cumulative index of reported alcohol use and smoking in Unplugged 2 with a pre-test. However, a chi-square test for independence (with Yates Continuity Correction) indicated a significant association in Unplugged 2 without a pre-test between gender and smoking in the control group (CG3),  $\chi^2$  (1, n= 210) = 4.97, p = .03, phi = .17. Girls were more likely to report smoking (21.4%) compared to boys (9.3%). This can be seen in Table 7.

*Table 6.*  
*Differences between the boys and the girls in alcohol use, smoking and the cumulative index of alcohol use and smoking during the last 30 days at T3 in Unplugged 2 with a pre-test.*

		CG2				$\chi^2$
		Boys		Girls		
		N	%	N	%	
<b>AU</b>	Not used	88	68.8	79	70.5	0.025
	Used	40	31.3	33	29.5	
<b>Smoking</b>	Not used	107	82.9	89	79.5	0.277
	Used	22	17.1	23	20.5	
<b>CI</b>	Not used	81	63.3	73	65.2	0.029
	Used	47	36.7	39	34.8	
		EG2				$\chi^2$
		Boys		Girls		
		N	%	N	%	
<b>AU</b>	Not used	47	61.0	52	76.5	3.290
	Used	30	39.0	16	23.5	
<b>Smoking</b>	Not used	65	84.4	58	85.3	0.000
	Used	12	15.6	10	14.7	
<b>CI</b>	Not used	45	58.4	47	69.1	1.344
	Used	32	41.6	21	30.9	
		EG*2				$\chi^2$
		Boys		Girls		
		N	%	N	%	
<b>AU</b>	Not used	58	84.4	57	70.4	0.436
	Used	18	15.6	24	20.6	
<b>Smoking</b>	Not used	65	91.3	61	74.4	1.855
	Used	12	8.7	21	25.6	
<b>CI</b>	Not used	56	73.7	49	60.5	2.513
	Used	20	26.3	32	39.5	

Note: CG2= control group; EG2= experimental group; EG\*2= experimental group with n-Prevention; AU= alcohol use, CI = cumulative index of alcohol use and smoking

Table 7.  
Differences between the boys and the girls in alcohol use, smoking and the cumulative index of alcohol use and smoking during the last 30 days at T3 in Unplugged 2 without a pre-test.

		CG3				$\chi^2$
		Boys		Girls		
		N	%	N	%	
AU	Not used	67	62.6	68	66.7	0.218
	Used	40	37.4	34	33.3	
Smoking	Not used	97	90.7	81	78.6	4.971*
	Used	10	9.3	22	21.4	
CI	Not used	65	60.7	64	62.7	0.024
	Used	42	39.3	38	37.3	
		EG3				$\chi^2$
		Boys		Girls		
		N	%	N	%	
AU	Not used	38	66.7	51	72.9	0.317
	Used	19	33.3	19	27.1	
Smoking	Not used	50	87.7	51	72.9	3.398
	Used	7	12.3	19	27.1	
CI	Not used	36	63.2	44	62.9	0.000
	Used	21	36.8	26	37.1	
		EG*3				$\chi^2$
		Boys		Girls		
		N	%	N	%	
AU	Not used	64	80.0	65	76.5	0.130
	Used	16	20.0	20	23.5	
Smoking	Not used	70	86.4	72	85.7	0.000
	Used	11	13.6	12	14.3	
CI	Not used	61	76.3	59	70.2	0.479
	Used	19	23.7	25	29.8	

Note: CG3= control group; EG3= experimental group; EG\*3= experimental group with n-Prevention; AU= alcohol use, CI = cumulative index of alcohol use and smoking, \*= p<0.05

The binary logistic regression revealed that there was no significant effect of either Unplugged or gender on reported alcohol use, reported smoking and the cumulative index of reported alcohol use and reported smoking at T3. There was no significant moderation effect of gender in any of the measurements.

There was also no significant effect of Unplugged 2 with a pre-test, nor moderation effect of gender. However, there was a significant effect of gender on reported smoking at T3. Girls were more likely to report smoking compared to boys. This regression model explained 5.5% of the variance and correctly classified 83.3% of cases.

Unplugged 2 without a pre-test was significantly associated with alcohol use at T3 in both experimental groups (EG3, EG\*3). Schoolchildren in the experimental group (EG3) and in the experimental group with n-Prevention (EG\*3) were less likely to report alcohol use compared to the control group (CG3). This regression model explained 16.9% of the variance and correctly classified 77.1% of the cases. Unplugged 2 without a pre-test was also significantly associated with the cumulative index of reported alcohol use and reported smoking at T3 in the experimental group with n-Prevention (EG\*3). Schoolchildren in the experimental group with n-Prevention (EG\*3) were less likely to report alcohol use and/or smoking. This regression model explained 16.9% of the variance and correctly classified 75% of cases. There was no significant effect of gender and no moderation effect of gender.

All significant findings are presented in Table 8.

*Table 8.*  
*Regression models for smoking, alcohol use and the cumulative index of alcohol use and smoking among schoolchildren in Unplugged 2.*

<b>T3 in Unplugged 2 with a pre-test</b>			
	<b>Smoking</b>		
	<b>OR</b>	<b>95% C. I</b>	
<b>Gender´</b>	<b>0.55*</b>	0.33	0.93
<b>EG2´´</b>	0.67	0.35	1.28
<b>EG*2´´</b>	1.06	0.59	1.91
<b>Smoking T1</b>	<b>0.13**</b>	0.05	0.33
<b>T3 in Unplugged 2 without a pre-test</b>			
	<b>Alcohol use</b>		
	<b>OR</b>	<b>95% C. I</b>	
<b>Gender´</b>	0.97	0.60	1.56
<b>EG3´´´</b>	<b>0.42*</b>	0.23	0.79
<b>EG*3´´´</b>	<b>0.35**</b>	0.20	0.62
<b>AU T2</b>	<b>0.12**</b>	0.07	0.21
	<b>Cumulative index of alcohol use and smoking</b>		
	<b>OR</b>	<b>95% C. I</b>	
<b>Gender´</b>	0.85	0.54	1.35
<b>EG3´´´</b>	0.58	0.32	1.03
<b>EG*3´´´</b>	<b>0.41**</b>	0.23	0.70
<b>CI T2</b>	<b>0.13**</b>	0.08	0.21

Note: ´=girls as a reference group; ´´=control group 2 in Unplugged 2 with a pre-test as a reference group; ´´´= control group 3 in Unplugged 2 without a pre-test as a reference group; EG2= experimental group in Unplugged 2 with a pre-test; EG\*2= experimental group with n-Prevention in Unplugged 2 with a pre-test; EG3=experimental group in Unplugged 2 without a pre-test; EG\*3=experimental group with n-Prevention in Unplugged 2 without a pre-test;\*\*=p<0.001; \*p<0.05

## 6. CONCLUSION/DISCUSSION

The results have shown that the long-term effectiveness of the Unplugged program cannot be confirmed. This is the same as Orosová et. al. (2020) found regarding alcohol consumption among schoolchildren. Gabrhelík, et. al. (2012b) also found the same results regarding alcohol use and tobacco use among schoolchildren. Giannotta, Vigna-Taglianti, Galanti, Scatigna, and Faggiano (2014) have also stated that the effect of taking part in Unplugged is generally weak.

The effect of Unplugged 2 with a pre-test was also not confirmed. However, the results have shown a significant effect of gender on reported smoking. Girls are more likely to report smoking in comparison to boys. ESPAD (2019) found that the largest gender differences where girls reported higher rates of smoking than boys were in Slovakia and Bulgaria. Rodríguez-Planas and Sanz-de-Galdeano (2019) have stated that the female-to-male smoking prevalence ratio varies widely across countries. In particular, women smoke as much as men in high-income countries. Likewise, gender-equal societies increases girls' smoking habits.

The results have shown the long-term effectiveness of Unplugged2 without a pre-test on reported alcohol use. The children in the experimental group and the experimental group with n-Prevention were less likely to report alcohol use. This has also been found by Štefaňáková, Kulanová-Dobrowolska, Orosová, and Abrinková (2019). According to Caria, Faggiano, Bellocco, Galanti, and EU-Dap Study Group (2011) adolescents who took part in this program, compared to adolescents in the control group, were far less likely to report alcohol use problems.

The results have shown the significant effect of Unplugged 2 without a pre-test in the experimental group with n-Prevention on the cumulative index of reported alcohol use and reported smoking. The children in the experimental group with n-Prevention were less likely to report alcohol use and/or smoking. These findings highlight the importance of booster sessions in enhancing the effectiveness of school-based preventive programs (Botvin & Griffin, 2003; Skara & Sussman, 2003).

In conclusion, the results show the long-term effectiveness of Unplugged 2 without a pre-test design on reported alcohol use in the experimental group and experimental group with n-Prevention, as well as on the cumulative index of reported alcohol use and reported smoking in the experimental group with n-Prevention. On the other hand, the effectiveness of the programs Unplugged and Unplugged 2, both with a pre-test design, has not been confirmed.

From the social-developmental perspective, experimentation with substance use such as alcohol use and smoking can be considered normative behavior due to it being a period of exploration, identity seeking as well as a part of the transition to adulthood which can help to achieve valued social goals. However, recognizing the developmental nature of substance use during adolescence may be key to distinguishing factors that predict socially driven as well as relatively transient use during adolescence from factors that predict long-term problems with substance abuse that extend well into adulthood (Allen, Loeb, Narr, & Costello, 2020). According to Mastern (2007) this view is especially held in societies where alcohol consumption is widely accepted in adulthood and therefore developing an appropriate relationship with alcohol is perceived as a developmental task of transitioning to adulthood. However, the earlier the onset of substance use, the higher the probability of future short-term consequences such as mental and behavior problems. This can lead to a snowball effect where the substance use affects one aspect of development leading to other problems in development trajectory. There are many factors which contribute to the use of alcohol among adolescents. Socioeconomic status is one which

plays a particularly important part. Previous findings have suggested that pupils with low educational aspirations should be the target population for interventions aimed at reducing alcohol use among adolescents and that more actions regarding the reduction of and abstinence from alcohol should be encouraged in educational institutions (Liu et al., 2016).

In the current study, a Solomon four group design was used. When the results were processed there was a problem of statistical data processing due to the fact that the number of substance users is much lower among schoolchildren in comparison with the number of non-users. As Botvin and Griffin (2006) have mentioned, it is difficult to assess the impact of an intervention on behavioural outcomes among schoolchildren, because the use is very low, especially smoking. Another limitation of the research also lies in the fact that the data were obtained directly from schoolchildren through questionnaires. It is only their statements about alcohol use and smoking which can be relied on so there is a certain likelihood of giving socially acceptable answers. In conclusion, further studies looking at the effectiveness of preventive programs should include methods for detecting fidelity components.

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## Chapter #13

# CALLING AND WELL-BEING OF TEACHERS: THE MEDIATING ROLE OF JOB CRAFTING AND WORK MEANINGFULNESS

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### ABSTRACT

People who consider their work as a calling find it fulfilling, purposeful, and socially useful, thus leading to higher levels of well-being. For them work is a central part of the identity and represents one of the most important domains of their lives, we assume that they are more prone to craft their job. They tend to make the physical and cognitive changes in the task or relational boundaries of their work to make it more meaningful. Both experiencing work as a calling and job crafting are found to be associated with psychological well-being, and sense of meaning. This study adds to literature by exploring a serial mediation model with job crafting and work meaningfulness mediating the relationship between teacher calling orientation and teacher flourishing. The sample consisted of 349 primary school teachers from public schools in Croatia. Self-report measures of calling orientation, job crafting, work meaning, and flourishing were used. The findings revealed that the job crafting via increasing structural job resources mediated the relationship between calling orientation and work meaningfulness. Furthermore, results of serial mediation showed that increased structural job resources and work meaningfulness foster teachers' well-being. Based on these findings, several practical implications can be noted.

*Keywords:* calling, flourishing, job crafting, teachers, well-being, work meaningfulness.

### 1. INTRODUCTION

Numerous studies documented the positive relationship between well-being and success at work (for review see Walsh, Boehm, & Lyubomirsky, 2018). In other words, happy workers are successful workers. In the context of teaching profession there is also evidence that wellbeing may be significant contributor to teacher effectiveness. For example, it was found that teachers happiness (Briner & Dewberry, 2007) and life satisfaction (Duckworth, Quinn, & Seligman, 2009) are related to their students' academic achievement. Teachers job satisfaction also has many important implications. There is evidence that job satisfaction is positively related to students achievement (Opdenakker & Van Damme, 2006) and satisfaction (Collie, Shapka, & Perry, 2012; Spilt, Koomen, & Thijs, 2011), higher instructional quality and better learning support for students (Klusmann, Kunter, Trautwein, Lüdtke, & Baumert, 2008; Kunter et al., 2013), stronger job commitment and less proneness to leave the teaching profession (Blömeke, Houang, Hsieh, & Wang, 2017; Klassen & Chiu, 2011). With this relationship in mind, it would be worth finding out the antecedents of teachers' job satisfaction and well-being.

## 2. BACKGROUND

Research suggests that people tend to frame their relationship to work in different ways: as job, career, and calling (Bellah, Madsen, Sullivan, Swidler & Tipton, 2008; Wrzesniewski, 2003). For some employees' work is "just a job", a source of financial security and is not a central part of their identity. Some see their work as career and are focused on advancement and achievement of professional goals (Bellah et al., 2008; Wrzesniewski, 2003). They invest more in their professional identity than those with a job orientation. Finally, employees with a calling orientation view their work as a fulfilling and intrinsically rewarding, purposeful, and socially useful. Therefore, work is a central part of their identity and represents one of the most important domains of their lives (Bellah et al., 2008; Wrzesniewski, 2003; Wrzesniewski, McCauley, Rozin, & Schwartz, 1997). Although, all abovementioned work orientations were researched, majority of studies focused on the calling orientation (e.g. Harzer & Ruch, 2012; Peterson & Park, 2006; Peterson, Park, Hall & Seligman, 2009). It is generally believed that teachers tend to experience their work as a calling more often than employees in other professions (e.g., Hagmaier & Abele, 2012). Previous studies revealed that it is a rather frequent phenomenon, the percentage of teachers with calling orientation varying from 45% in United Kingdom to 83% in Croatia (e.g., Bullough & Hall-Kenyon, 2012; Dinham & Scott, 2000; Rijavec, Pečjak, Jurčec, & Gradišek, 2016)

The relationship between calling orientation and various positive outcomes including well-being is well established. Calling orientation has been found to be positively related to life and job satisfaction, work and life meaning and enthusiasm (e.g., Dobrow & Tosti-Kharas, 2011; Duffy & Dik, 2013; Duffy, England, Douglass, Autin, & Allan, 2017). Several studies confirmed strong links of calling orientation and perception of meaningful work (e.g., Bunderson & Thompson, 2009; Rothmann & Hamukang'andu, 2013; Willemsen & Deacon, 2015). However, according to Work as Calling Theory (for review see Duffy, Dik, Douglass, England, & Velez, 2018; Duffy, Douglass, Autin, England, & Dik, 2016) calling and meaningful work each affect each other over time, meaning that perceiving a calling will lead to experience increased work meaning, which in turn will lead to an increased sense of living a calling and consequently to a positive outcome such as well-being. In calling theory both personal and contextual factors are highly relevant and if incongruence occur, person might promote the work meaningfulness through job crafting (Berg, Dutton, Wrzesniewski, 2013).

The term *job crafting* was introduced by Wrzesniewski and Dutton to describe "... the physical and cognitive changes people make in the task or relational boundaries of their work" (2001, p. 179). These changes include three different types of crafting: formal task crafting (how work is conceptualized and carried out), relational job crafting (how often and with whom they interact at work), and cognitive crafting (how they cognitively ascribe meaning and significance to their work). In other words, they define it as a process of self-initiated redefining and reimagining relational, behavioral, and cognitive work engagements in personally meaningful ways. More recently Bakker and Demerouti (2014) used the job demands-resources (JD-R) (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) theory to describe job crafting behaviors. This theory assumes that, job characteristics can be classified into two categories: job demands and job resources. Job demands refer to job aspects that require sustained physical or cognitive effort from the employee and are associated with certain costs (e.g. burnout). Job resources are aspects of the job that help employees achieve work related goals, learn new skills, stimulate personal development and deal with job demands (Bakker & Demerouti, 2007; Demerouti et al.,

2001). Within the framework of JD-R model four job crafting dimensions were defined: increasing job resources (e.g., autonomy and variety), increasing challenging job demands (e.g., new projects), increasing social job resources (e.g., social support and feedback), and decreasing hindering job demands (e.g., fewer cognitive demands) (Tims, Bakker, & Derks, 2012). Employees engage in job crafting behaviours when there is imbalance between job demands and job resources in order to take control and introduce changes as proactive form of behavior (Parker & Collins, 2010; Seibert, Kraimer & Crant, 2001), and take initiative to improve or change the circumstances (Crant, 1995).

Job crafting activities are found to be important also in teachers. Studies of job crafting in early childhood educators found that collaborative crafting (teachers together collectively redesign their jobs) was positively related to both positive individual job outcomes and organizational outcomes (Leana, Appelbaum & Shevchuk, 2009), parallel to research founding that those teachers who crafted their work by increasing their job resources experienced higher levels of work engagement (Bakker & Bal, 2010). Research in South African school teachers (Peral & Geldenhuys, 2016) also found that job crafting in terms of increasing structural resources and challenging job demands was positively associated with work engagement. On the other hand, crafting through increasing social job resources was found to have no effect on work engagement and psychological meaningfulness amongst teachers (Ingusci, Callea, Chirumbolo, & Urbini, 2016). Similarly, decreasing hindering job demands also had no effect on teachers' level of work engagement (Peral & Geldenhuys, 2016). The research of Peral & Geldenhuys (2016) found empirical support for the mediated role of meaningfulness in the relationship between job crafting and work engagement. The other more recent research (Ingusci et al., 2016) found that perceived organizational support fully mediated the relationship between job crafting and job satisfaction. There is evidence that employee job crafting has a positive impact on well-being (Bakker, Tims & Derks, 2012; Schaufeli, Bakker & Van Rhenen, 2009; Tims et al., 2012). However, it is yet not clear which components of job crafting are most relevant for increasing work meaningfulness which is an important factor in living a calling. In addition, there is no study researching the role of job crafting and meaningfulness as mediators in the relationship between calling and well-being. Based on the above-mentioned research, we assume that teachers with calling orientation are more prone to craft their job thus making it more meaningful, which in turn, increase teacher's well-being.

### **3. OBJECTIVES AND METHODS**

#### **3.1. Objectives**

The central aim of this study is to examine the relationship between perceiving work as a calling, job crafting, work meaningfulness and well-being in primary school teachers.

First, we aimed to investigate what job crafting dimensions mediate in the relationship between calling orientation and work meaningfulness.

Second, we aimed to test whether job crafting and work meaningfulness mediates between calling orientation and flourishing.

## 3.2. Method

### 3.2.1. Participants and procedure

The sample consisted of 349 primary school teachers (95% female) from public schools in northern western region of Croatia. An average length of service was 22 years (ranged from 0-43 years of teaching experience). Considerations about the sample are presented later in the text.

Questionnaires were administered during the primary teachers' professional meetings at the county level and lasted approximately 20 minutes. Participants were informed about the aim of the research, assured that all collected data would remain confidential, and used for research purposes only.

### 3.2.2. Instruments

**Work-Life Questionnaire** (Wrzesniewski et al., 1997) is a 3-item questionnaire measuring the attitude towards work. The questionnaire includes three brief scenarios, which describe individuals who approach work as a Job, a Career, and Calling. Each scenario is rated on a 4-point Likert scale to indicate their likeness to how similar they are to the person described (from 1 - *not at all like me*, through 4 - *very much like me*). In this study only the Calling scenario was used. Extract from the scenario (p. 24):

*Person's work is one of the most important parts of his life. He is very pleased that he is in this line of work. He tends to take his work home with him and on vacations, too. He is very satisfied with his work and feels good about his work because he loves it, and because he thinks it makes the world a better place.*

**The job crafting scale** (Tims et al., 2012) was used for assessing job crafting scale. The scale measures four dimensions of job crafting using 21 items. The four scales are *increasing structural job resources* (e.g., "I make sure that I use my capacities to the fullest"), *increasing social job resources* (e.g., "I ask others for feedback on my job performance") *increasing challenging job demands* (e.g. "If there are new developments, I am one of the first to learn about them and try them out"), and *decreasing hindering job demands* (e.g., "I try to ensure that my work is emotionally less intense"). Respondents indicate how often they engaged in each of the behaviors on a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*).

**Work Meaningfulness scale** (Bunderson & Thompson, 2009) measures perceived meaning at work with the five-item scale (e.g., "I have a meaningful job"). Individuals respond to each item on a 5-point Likert scale ranging from 1 (*not at all through*) to 5 (*completely*). Higher overall (average) score indicates greater work meaningfulness.

**Flourishing Scale** (Diener et al., 2009) is an eight-item measure of positive human functioning. Items assess perceived success in important areas such as competence, engagement with daily activities meaning and purpose in life, positive relationships, and optimism (e.g. "I am competent and capable in the activities that are important to me"). Participants rated items on a 7-point scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The scale calculated as the mean item score represents eudemonic dimensions of well-being.

All scales were used previous in Croatian samples and shown adequate psychometric characteristics (Miljković, Jurčec, & Rijavec, 2016; Rijavec et al., 2016; Vid, Glavaš, & Rijavec, 2019).

## 4. RESULTS

### 4.1. Descriptive statistics and correlations

The descriptive statistics and intercorrelations of all measured variables are presented in Table 1. Croatian teachers mostly perceive their work as a calling. They often can craft their job through increasing structural job resources, regularly through increasing challenging job demands and decreasing hindering job demands and somewhat rarely through increasing social job resources. They perceive their work as highly meaningful and rate their eudemonic well-being as relatively high.

The results of the correlational analysis (Table 1) indicates that there was a significant positive correlation between work as calling and work meaningfulness. Similarly, there was a significant positive correlation between work as calling and flourishing, as well as between work meaningfulness and flourishing. Only two out of four job crafting dimensions - increasing structural job resources and challenging job demands positively correlated with calling orientation and work meaningfulness. Flourishing was positively correlated with three job crafting dimensions - increasing structural job resources, social job resources and challenging job demands.

Table 1.

*The descriptive statistics and intercorrelations of calling work orientation, job crafting, work meaningfulness and flourishing.*

	1.	2.	3.	4.	5.	6.	7.
1. Calling		.19**	.23**	-.09	.07	.40**	.28**
2. Increasing structural job resources			.59**	.27**	.19**	.28**	.46**
3. Increasing challenging job demands				.18**	.33**	.16**	.31**
4. Decreasing hindering job demands					.01	-.08	.05
5. Increasing social job resources						.07	.16**
6. Work meaningfulness							.33**
7. Flourishing							-
Min - max	1.00-4.00	2.80-5.00	1.00-5.00	1.60-5.00	1.00-5.00	3.00-5.00	2.50-7.00
Cronbach's alpha	n.a.	.86	.88	.73	.84	.80	.90
M	3.42	4.28	3.35	3.16	2.83	4.71	5.83
SD	0.75	0.54	0.78	0.64	0.73	0.37	0.77

Note: \* $p < .05$ ; \*\* $p < .01$

### 4.2. Mediating role of job crafting dimensions in the relationship between calling orientation and work meaningfulness

Parallel mediation analyses with four mediators using the PROCESS macro for SPSS were performed to test the hypothesized mediation role of job crafting dimensions in the relation between calling orientations and work meaningfulness. A Monte-Carlo (bootstrapping) approximation was obtained with 2000 bootstrap resamples (the 95%

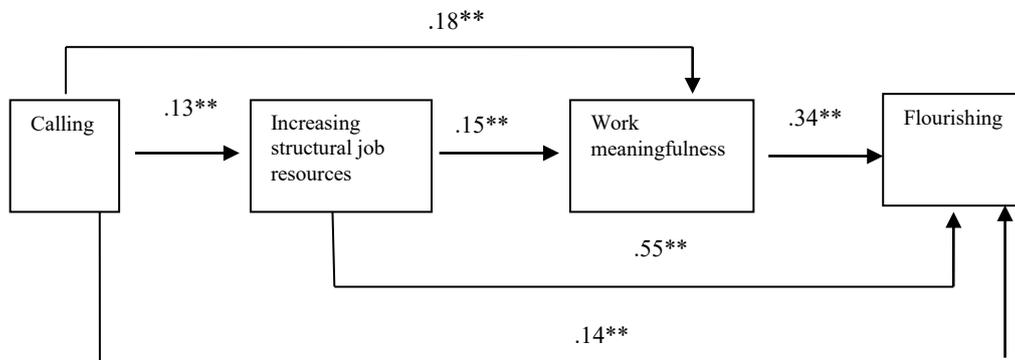
confidence). The models tested job crafting dimensions as mediators between calling and work meaningfulness. Results showed there is no mediation role of increasing challenging job demands, decreasing hindering job demands, and increasing social resources (95% CI). Results confirmed only the mediating role of increasing structural job resources ( $CI = .11$  to  $.28$ ) The mediation effect was partial since the direct effect between calling orientation and meaningful work remained significant.

### 4.3. Mediating role of increasing structural job resources and work meaningfulness in the relationship between calling orientation and flourishing

To assess more comprehensively the mediating role of both job crafting and work meaningfulness in the relationship between calling orientation and flourishing, we aimed to perform the serial mediation model. Since only crafting by increasing structural job resources was found to mediate between calling orientation and work meaningfulness, we assessed the serial mediation of increasing structural job resources and work meaningfulness in the relationship between calling orientation and flourishing. Results confirmed the serial mediation ( $CI = .00$  to  $.02$ ) (Figure 1). Teachers' who see their job as a calling tend to increase structural job resources, which brings more meaning into their work. Higher work meaningfulness, in turn, increase teachers' well-being.

Figure 1.

*Increasing structural job resources and work meaningfulness as mediators between calling orientation and flourishing.*



Note. Numerical values represent standardized path coefficients ( $\beta$ ). P-values:  $*p < .05$ ;  $**p < .01$ ;  $***p < .001$ .

## 5. DISCUSSION/CONCLUSION

This study proposed a model linking calling orientation with well-being. We hypothesized that both job crafting and work meaningfulness operate as mediators in the relationship between calling orientation and well-being. More specifically, it was proposed that perceiving work as a calling would lead to higher levels of job crafting, which in turn, would lead to the higher work meaningfulness and consequently higher flourishing.

Present study confirmed significant relationship between calling orientation and meaningful work as was expected by the previous studies (e.g., Bunderson & Thompson, 2009; Duffy, Allan, Autin, & Bott, 2013; Rothmann & Hamukang'andu, 2013; Willemse & Deacon, 2015). The results of parallel mediation analyses revealed that job crafting via increasing structural job resource partially mediated the relationship between calling orientation and work meaningfulness. Furthermore, results showed that increased structural job resources and work meaningfulness foster teachers' well-being. Findings suggest that a sense of calling leads teachers to craft their jobs by increasing structural job resources through creating opportunities for professional development (e.g., skills, talents, competencies) and autonomy which in turn fulfill their work with meaning and purpose. This finding is consistent with studies finding that job crafting (Tims et al. 2012; Slemp & Vella-Brodick, 2014) and meaningful work (Blake, Batz-Barbarich, Sterling, & Tay, 2019; Miljkovic, et al., 2016) predicted well-being.

Recent research has found that key mechanisms in transferring ones' calling into job crafting behavior are career commitment, occupational self-efficacy, and job autonomy (Chang, Rui, & Lee, 2020). Individuals who perceive their work as a calling are more aware of their goals and mission to achieve (Fried, Grant, Levi, Hadani, & Slowik, 2007) and motivated to gain responsibility for their own career development (Hall & Chandler, 2005) thus crafting their work to fit their capacities. This study found that increasing structural job resources, i.e., increasing one own capacity is the component of job crafting which leads to work meaningfulness which in turn transfers to higher wellbeing. On the other hand, increasing challenging job demands and social job resources were associated with higher flourishing, but these relationships were not mediated through work meaningfulness. Thus, these proactive work behaviors, as found in present study, directly and indirectly through making job more meaningful promote teachers flourishing. One possible explanation for increasing job resources being the only mediating variable between calling and work meaningfulness are sources of work meaning in teachers' profession. Several studies found that teachers most frequently find meaning through having a positive impact on their students learning and life in general (Fourie & Deacon, 2015). They achieve that by using their pedagogical knowledge for applying, changing, and inventing new methods and strategies. This is also the part of their work that allows them the greatest autonomy in crafting their work.

It is worth noting that decreasing hindering job demands was proactive behavior which was not related to teachers' wellbeing measured as flourishing. That is, teachers who attempted to craft their work by decreasing their hindering job demands experienced no increase in their levels of flourishing. Further studies may investigate whether this component of proactive behavior is more related to lower level of work stress and burnout. Further, analysis of the descriptive statistics revealed that teachers in this sample used increasing structural job demands most frequently, which provide a possible explanation for aforementioned relationships.

Based on these findings, teachers should be encouraged to cultivate job crafting, especially structural job resources, as it is an important path to meaningfulness in work context and overall psychological well-being.

## **6. FUTURE RESEARCH DIRECTIONS**

The study was conducted on the sample of primary school teachers from one region and should be replicated with samples of teachers from other parts of Croatia and with samples of teachers in secondary schools. This study had a large female sample (95%) reflecting the actual ratio of female and male primary school teachers in Croatia. Future

studies should include samples in higher grades and secondary schools with higher proportion of male teachers.

Besides corroborating the findings of this study, future studies may further investigate the role of teachers age, work experience or organizational climate in school as possible moderating factors in the relationship between calling, job crafting behaviors and teachers' wellbeing. With regard to the cross-sectional nature of the study longitudinal research study should be carried out to determine the existence of a possible causal relationship between variables in the model. Finally, given that only increasing structural job resources had impact on teachers' well-being, the potential reasons behind this matter should be explored. Qualitative or mixed-method research approach may be useful for investigating this issue.

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## Chapter #14

### DOMESTIC VIOLENCE AND SCHOOL PERFORMANCE

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#### ABSTRACT

We investigated if domestic violence affects the school performance of children who witness episodes of violence against their mothers. The data were collected through documentary research, analysing the information recorded in the files of the Center for Reference and Attendance to Women (CRAM, in Portuguese) and the Municipal Department of Education (SME). The records of 20 children regularly enrolled in public elementary schools were used, whose mothers sought the services of CRAM. The dependent variable was school grades, analysed according to a repeated measures design: during the occurrence of episodes of domestic violence and after these episodes had ceased. School attendance, family socioeconomic level, and mothers' education were analysed as well. The results showed that students had lower school performance after the cessation of the episodes of violence. No effects of other variables were observed. Factors related to the phenomenon are discussed as possible causes: separation from the father, change of address, change of custody, and others. Considering that the sample in this study was composed of students from low-income families, the results point to a kind of "Matthew effect", that is, a relationship between violence, poverty, and ignorance, forming a cycle that is very difficult to break.

*Keywords:* violence against women, school performance, elementary school, basic education.

#### 1. INTRODUCTION

Domestic violence against women is a worldwide phenomenon that is not restricted by ethnicity, socioeconomic status, age, or religion. Although men, children, and the elderly can be victims of domestic violence directly or indirectly, the majority of victims are women, and the perpetrators are generally their marital partners. According to the Latin American Faculty of Social Sciences (Waiselfisz, 2015), in Brazil 27.1% of feminicides occur in the family context. The Institute for Applied Economic Research (IPEA, 2019) estimated that in 2017, 4,936 women were murdered, victims of this type of violence. The Brazilian state with the highest rate of female homicides is Roraima, followed by Rio Grande do Norte and Acre. The state with the lowest incidence of homicides against women is São Paulo: 2.2%. In the municipality where the present research was conducted, whose population is approximately 460,000 (see below), in the year 2019 four feminicides were recorded and 1,189 protective measures (a measure provided by law, which aims to safeguard women against further acts of violence) were granted.

In Brazil, violence against women was criminalized by Law 11,340 – known as the Maria da Penha Law – (Presidência da República, 2006). Its purpose is to inhibit the practice of domestic violence against women and to punish aggressors. In its Article 5, the law establishes that "[...] domestic and family violence against women is defined as any action or omission based on gender, which causes death, injury, physical, sexual or psychological suffering, and moral or property damage. It is a complex phenomenon, whose dynamics

constitute, according to Soares (2005), a cycle composed of three phases. The first is the "building of tension in the relationship", the second, the "explosion of violence", and the third, the "honeymoon" - the repentance of the aggressor (pp. 23-25). According to the author, this cycle would help explain some of the reasons why victims remain in abusive relationships. Breaking out of this cycle is no easy task. Among the difficulties faced by victimized women are the fear, the shame of seeking help, the hope that the partner will change his behaviour, the economic dependence on the partner, the inexistence of specialized services in some locations, among others (Soares, 2005).

The research reported here revealed some characteristics common to the environments where domestic violence was present. For the victimized women, violence was part of their routine since childhood, since they witnessed the father or stepfather's violence against their mother, and in some cases, besides witnessing it they were also its direct victims. The relapse into abusive relationships is another common characteristic. Some women, even when they break the cycle of violence, end up entering into a new abusive relationship or re-establish a relationship with the abusive ex-partner. Regarding the children of these women, most of them have witnessed episodes of violence and are subject to its possible consequences.

Another aspect observed, common to the cases that made up our sample, is that violence did not mean a break in the children's standard of living, but a standard to be broken. That is, they did not have a life without violence, and, at some point, it became part of their lives. On the contrary, they were born in a context where violence was an integral part of their daily lives. These children constitute a part of the young population that faces highly unfavorable conditions from birth, whose future is very uncertain and with little chance of being promising.

## **2. DOMESTIC VIOLENCE AND SCHOOL PERFORMANCE**

Many factors contribute to success or failure in school. They are internal, such as cognition, temperament, personality traits, developmental changes; and external, such as social, cultural, pedagogical, and many others. Moreover, they interact with each other and influence each other. Intelligence Quotient (IQ), for example, is a strong predictor of academic achievement (Hegelund, Flensburg-Madsen, Dammeyer, & Mortensen, 2018), social class, in turn, influences it. It has been found that in standardized IQ tests, children from lower social classes score on average 10 to 15 points lower than children of the same age belonging to higher social classes (Shaffer, & Kipp, 2012, p. 409). Social class is also a strong determinant of school success, as demonstrated by Caprara (2017).

Considering that the phenomenon at hand is something that occurs within the family, one must look inside. The family is the child's first social nucleus, responsible for much of his or her initial formation in terms of behavioural, moral, intellectual, emotional, and developmental aspects, in general. Therefore, it is necessary to know some aspects of family dynamics in order to understand its determining role. The findings of Rohenkohl and Castro (2012) show that children of couples with high levels of conflict and low affectivity tend to present more behavioural and emotional problems compared to children of families whose parents have few conflicts and are more affectionate. Most of the studies in the literature on the subject have focused on understanding the violence that children and adolescents suffer directly (Jaffe, Hurley, & Wolfe, 1990; Martin, English, Clark, Cilenti, & Kupper 1996; Reichenheim, Hasselmann, & Moraes, 1999; Minayo, 2001; Araújo, 2002). Early research on the impact of simple exposure to domestic violence on children dates back to the 1970s and was conducted by North American researchers (Brancallhone,

Fogo, & Williams, 2004). In Brazil, the first study found on this subject is that of Corrêa and Williams (2000). These studies showed that children exposed to a violent environment are more likely to develop aggressive behaviour, depression, isolation, and low self-esteem, thus noting a range of highly detrimental and undesirable effects.

Depending on the type and intensity of domestic violence to which a child is exposed in his/her family environment, his/her behaviour will be affected in different ways. Exposure to severe physical and/or sexual domestic violence has been shown to be associated with problems in school (repetition, dropping out or discontinuation of studies), behaviour (nightmares, running away from home, thumb sucking), and aggression (Durand, Schraiber, Franca-Junior, & Barros, 2011). However, although troubled family relationships potentially trigger psychological and cognitive disorders that can affect school performance, research findings in the literature point that domestic violence alone does not negatively affect the school performance of children exposed to it (Brancalhone et al., 2004; Ghazarian & Buehler, 2010; Harold, Aitken, & Shelton, 2007). Therefore, the available data are inconclusive about the relationship between domestic violence against women and its possible effects on children's academic achievement. We hope, therefore, that the research reported here will shed some light on it.

### **3. METHODS AND RESULTS**

#### **3.1. Methods**

The research was conducted in a city in the northwest of the State of São Paulo, with an estimated population of 460,671 inhabitants, according to the Brazilian Institute of Geography and Statistics (IBGE) (2019). Its realization had the approval of the Research Ethics Committee of the Institute of Biosciences, Modern Languages (Letters) and Exact Sciences of the São Paulo State University (Unesp), São José do Rio Preto Campus, Brazil. Our sources of information were the Center for Reference and Attendance to Women (CRAM) and the Municipal Department of Education (SME) whose responsible professionals signed an informed consent form authorizing data collection.

##### **3.1.1. The sources of information**

This was a record-based research. The sources of information are presented below.

Center for Reference and Assistance to Women (CRAM) is part of the Secretariat of Rights for Women, People with Disabilities, Race and Ethnicity. Its main services are psychological and legal assistance to victims. They can be accessed by spontaneous demand or by referral made by municipal authorities linked to the area of security or health. In cases in which the woman suffers a death threat, shelter is provided in a "*Casa Abrigo*" (Shelter House) – a secret location, where the victim and her dependents are sheltered. Other possible measures may be including the victim in government programs for income transfer, education, health, and employment.

Municipal Secretariat of Education (MSE) is an executive body managing the municipality's education policies. Among several other functions, it keeps records with information about the school life of all students enrolled in the municipal public education.

### 3.1.2. Casuistry and procedure

The inclusion criteria adopted for the composition of the study sample were: (I) The mother should have broken the cycle of domestic violence; (II) during the period covered by the research, the child had to be enrolled in the Elementary School in the municipal educational system.

It should be clarified that in Brazil, Basic Education is divided into Elementary School (ES), lasting nine years, and High School, lasting three years. Elementary school, in turn, is subdivided into two stages, the first (ES-I) comprising the first to the fifth school year, and the second (ES-II) from the sixth to the ninth grade.

Initially, data were collected from the records of 43 eligible children for the research, as well as their mothers and their spouses. Twenty-three of them, however, did not meet at least one of the inclusion criteria and were excluded from the study. We were, therefore, left with 20 students (9 girls) with ages ranging from 8 to 13 years old on the date the mother sought the services of CRAM. All were from low-income families, and all were children exposed to episodes of domestic violence committed against their mother by her marital partner, 16 as witnesses and four as direct victims, having suffered one or more of its modalities: physical, psychological, sexual and neglect.

While the episodes of violence lasted, the students were in the second to seventh grades. Data collection was conducted about one year after such episodes had ceased, when the students were through third to ninth grades. At the time, seven students had advanced from ES-I to ES-II.

The students are the children of 16 women, of whom eight are brown and the other eight are black ( $n = 4$ ) or white ( $n = 4$ ). As for the mothers' education, one has not completed college, 10 have complete ( $n = 4$ ) or incomplete ( $n = 6$ ) high school, and five have complete ( $n = 1$ ) or incomplete ( $n = 4$ ) elementary school. Their monthly family income was equal to or less than the equivalent of U\$ 219. The time these women have been involved in a violent relationship varied from one to 38 years, and for 13 of them the duration was from one to 12 years. Two women suffered only psychological violence, while the other 14 suffered a combination of several types, including physical, moral, psychological, sexual, and property violence. Nine women were experiencing a violent relationship for the first time. The others had already witnessed or experienced domestic violence in childhood or were repeat offenders in a violent relationship.

As for the profile of the perpetrators of domestic violence, 11 of them were the biological parents of the children, five were white and 11 were of African descent. Twelve of them used narcotic substances, such as alcohol and/or illicit drugs.

The dependent variables defined for the study were school grades and attendance for the years 2013 to 2018, obtained from the MSE records.

As described below, we adopted a repeated measures design. The temporal references for defining the moments "during" and "after" the episodes of violence are, respectively, the search for CRAM services by the mother and the interruption of violence after the couple's divorce.

### 3.1.3. Data analysis

The analysis of school performance was made in two different moments: during the occurrence of the episodes of domestic violence (T1) and after its cessation (T2). The annual averages of school grades in Portuguese, Mathematics, and Science were analysed, that is, the sum of the bimonthly grades divided by four. In the Brazilian educational system, this is the grade which determines whether the student will advance to the next grade or be retained in the same grade. In terms of measuring school performance, unlike

the scores produced by standardized tests, school grades are attributed through individual and idiosyncratic procedures, and are therefore subject to greater subjectivity and variability. As a way to check their consistency, we used the correlation analysis between the scores assigned by the teachers of the three subjects. At time T1, we observed a Spearman's  $\rho$  of .79 to .84 ( $p < .0001$ ), and at time T2, the correlations were .88 to .94 ( $p < .0001$ ). There is, therefore, a high degree of consistency in the teachers' assessment of their students' academic performance, which gives us some peace of mind to use the grades as the relevant data in this study. As for school attendance, the total number of absences in the analysed periods was considered.

Since the sample size is small and the data did not present a normal distribution, a non-parametric statistical test was used. The package used was BioEstat (5.0). The Wilcoxon test was applied to compare school grades between T1 and T2, and to compare school attendance at these two points in time. To analyse the possible influence of other factors on school performance, we considered only the grades at T1 and made comparisons between groups. The Median Test was applied to verify a possible effect of family socioeconomic status on students' school performance. In addition, the Mann-Whitney test was applied to verify the impact of the mother's schooling on the children's school performance (details in Alves, 2020).

### 3.2. Results

We analysed the possible effects of two independent variables on students' school performance: the mothers' level of education and the families' socioeconomic level. None of them had any influence on the dependent variable. Similarly, no significant correlations were found between school performance after the end of the domestic violence episodes (T2) and the time, in years, of exposure to them (Portuguese Language:  $\rho = -.242$ ;  $p = .30$ ; Mathematics:  $\rho = -.113$ ;  $p = .63$  and Science:  $\rho = -.046$ ;  $p = .84$ ). Finally, no significant differences were found between students' absences at T1 and T2 ( $Z = .0991$ ;  $p = .68$ ). Incidentally, there was also no difference in school grades due to the number of absences at T1 and T2 ( $Z = 1.6$ ;  $p = .12$ ).

As for school performance, the Wilcoxon test showed significant differences between T1 and T2 in Math ( $Z = 2.542$ ;  $p = 0.01$ ) and Science ( $Z = 2.131$ ;  $p = 0.03$ ), and a marginal difference in Portuguese Language ( $Z = 1.757$ ;  $p = 0.07$ ). Since this test only indicates whether or not there are differences between the measured variables, we resorted to an analysis of the medians to verify the direction of these differences. The result is presented in Figure 1. It can be seen that the median of the grades in the three subjects is lower at T2 than at T1 and that in the three subjects, the reduction of the median is accompanied by a reduction of the lower limit, as well as an increase in the dispersion of its values.

Figure 1.

Box plot representing grades by subject matter during and after episodes of violence. The lower and upper lines of the boxes represent the first and third quartiles respectively, while the middle line (thicker) represents the median. Vertical lines represent the higher and lower grades.

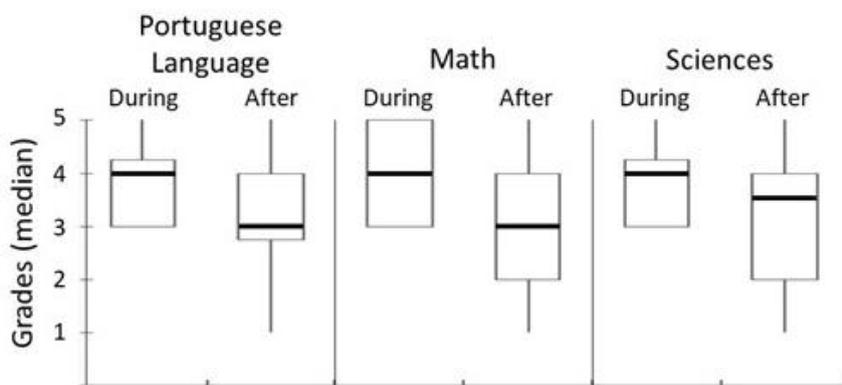
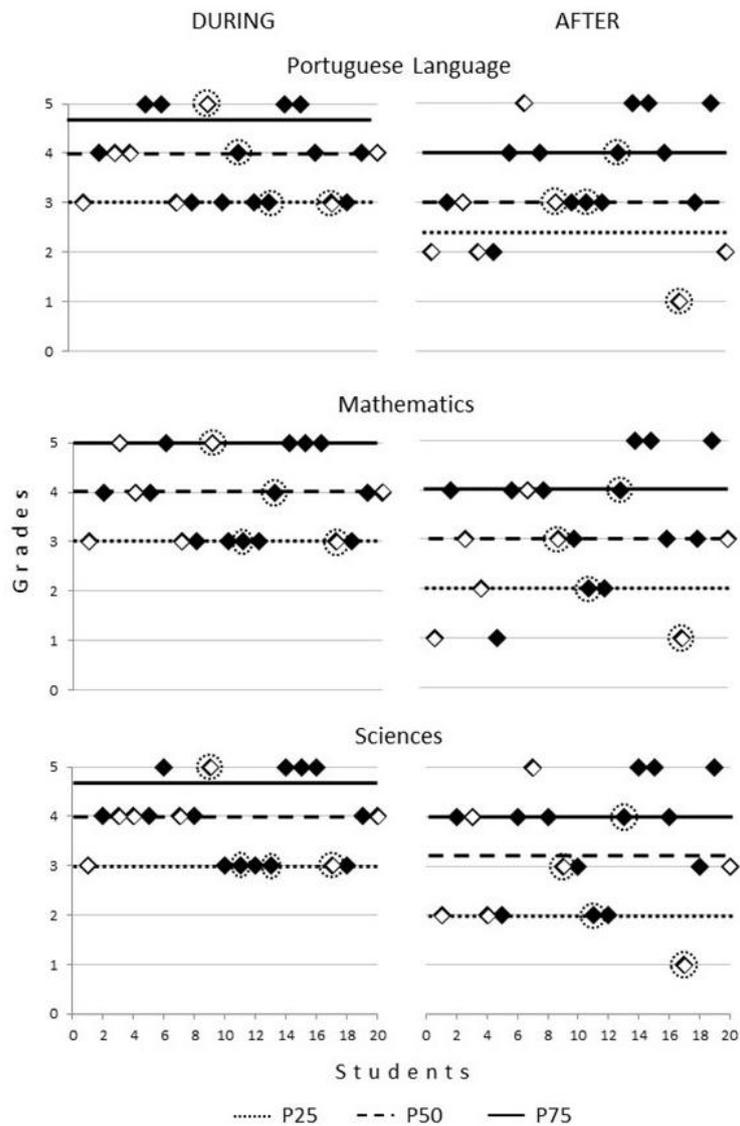


Figure 2 allows an individualized analysis of student performance at the two points in time. The scores are grouped in percentiles. If we take as reference P25, which is where the grades that lead to school retention are located, we observe that, specifically at T2, the majority of students who concentrate at this level are direct victims of domestic violence and/or those who advanced from ES-I to ES-II (see Discussion).

Figure 2.

Students' grades in the subject matters during the occurrence of episodes of domestic violence (T1) and after its cessation (T2). Students are numbered from 1 to 20 on the horizontal axis. The grades are grouped in percentiles. Diamonds represent the students and their placement on the lines corresponds to their respective individual grade. Black diamonds represent students who between T1 and T2 remained at the same school level, while empty diamonds represent students who advanced from level I to level II of Elementary School. Diamonds surrounded by a circle with dotted line represent students who not only witnessed episodes of domestic violence, but also directly suffered it.



## 4. DISCUSSION

Despite the ambiguity in the literature, we suspected that an end to episodes of domestic violence would be followed by progress in students' school performance. What we observed, however, was just the opposite. How can this be interpreted? Several aspects must be considered. We will address some of them.

### 4.1. The dependent variable

School grades may not be the only or the best measure of academic performance for scientific purposes. However, it cannot be ignored that they determine events of fundamental importance in the lives of students, including possibilities and even the impossibility of continuing their studies, with lasting effects on their self-esteem, employability, salary level, and standard of well-being.

### 4.2. Research design and scope of the method

The repeated measures design takes each individual of the sample as his or her own control, so that all variables are hypothetically controlled, including intra-subject variables. However, the present case is obviously not like a situation in which the independent variable can be experimentally manipulated to check its effects on the dependent variable. This is a complex natural situation, involving a multi-determined phenomenon with numerous variables interacting with and influencing each other. The design adopted may be a viable alternative but doing it through documentary research restricts the research to the information available in its original sources. Longitudinal studies with this type of design and application of standardized tests would also be subject to limitations, since the information about the families in which violence occurs is confidential and of restricted access, which would make it difficult to identify and recruit the possible participants.

For a more rigorous and sophisticated statistical control to be possible, a much larger data set would be required than we could access. The use of large samples is the best option to determine the weight of each of the multiple independent variables. On the other hand, it is a methodological option that makes research more expensive. Small samples make research cheaper, but the data thus generated are less generalizable. In view of these considerations, between-group designs emerge as a viable alternative, obviously not exclusive, with the possibility of using standardized tests and other instruments that allow obtaining detailed information about the participants and making comparisons.

Considering the scope of our methodological option, we emphasize that we have no information that allows us to assure that there was, in fact, an end to violence in the students' lives, be it domestic violence or any other of its several modalities. We only know that the couples separated and that, therefore, the episodes of violence between those specific marital partners ceased. However, we have no information about eventual new relationships contracted by the mothers, or about the pattern of relationship between them and their children, between the latter and their siblings and other inhabitants of their homes (grandparents, uncles, aggregates, etc.), or between the students and their schoolmates and friends in the neighbourhood. It cannot even be ignored that at least part of these same students may later have become protagonists of violence, as pointed out by literature, so that violence may continue to be part of their lives.

### **4.3. Social class**

As indicated in the Introduction, one determinant of school success is social class. The small number of cases included in the present study and the fact that they all belonged to low-income social strata prevented effects of socioeconomic level from being observed. However, there is robust evidence that students from higher social classes perform better than those from lower classes. Caprara (2017) demonstrated this through extensive research conducted on the nationwide database of the System for the Evaluation of Basic Education (SAEB). The results show that the effects of social class on academic achievement are persistent, even though they coexist with the impact of other variables, such as schooling, individual trajectory, and of pedagogical nature ones.

### **4.4. Adolescence and change of school level**

In the latter part of the period covered by the present research, students were approaching adolescence or had already reached this stage of development. This is a phase which is characterized by profound transformations, marked by significant advances in cognition and morality, accompanied by hormonal changes, changes in body and self-image, engagement in risky behaviours such as driving at high speed, the awakening of sexual interest, the risk of alcohol and drug abuse, and, among young people from less advantaged social classes, entry into the labour market (Belsky, 2010). All of this may, to some extent, compete with interest in school and interfere with school performance.

At this point, the presentation, even if partial and summarized of the results of a large-scale student evaluation periodically conducted by the System of School Performance Evaluation of the State of São Paulo (SARESP) (Secretaria da Educação do Estado de São Paulo, 2019) may be enlightening. It evaluates the knowledge of students of Basic Education in Portuguese and Mathematics, enrolled in state and municipal public schools and in private schools of the State.

In the latest assessment (Secretaria da Educação do Estado de São Paulo, 2019), approximately 90% of elementary school students from municipal networks participated, including that of the municipality where the research was conducted. According to the score obtained by the students, their performance is categorized into four levels: below basic, basic, adequate, and advanced. The results show that between the third and ninth grades, in both subjects matters there was an increase in the percentage of students with performance below the basic and basic levels. In the adequate and advanced levels, the trend is reversed, with a reduction in the percentage of students throughout the school years. In all cases, the percentages for the fifth and seventh grades show some variation of these two general trends (Secretaria da Educação do Estado de São Paulo, 2019, pp. 74-77).

Incidentally, students from private schools show higher results than those from public networks. In Brazil, public schools are attended by students who, for the most part, come from low-income families, while private school students come from families with higher purchasing power, with financial conditions to afford the high tuition fees, generally unaffordable for the majority of the Brazilian population. This corroborates the findings by Caprara (2017).

### **4.5. Psychological problems**

In addition to the above considerations, there is evidence that domestic violence is associated with psychological problems, such as depression, low self-esteem, fear, and aggression, already documented in the literature, as pointed out by Corrêa and Williams (2000), which can negatively interfere with school performance. Therefore, although the

students who took part in this research were developing cognitively, which, theoretically, would enable them to learn the increasingly more complex contents of the more advanced school years and/or levels, they experienced extremely unfavorable existential and situational conditions.

## 5. CONCLUSION

The results and the discussion generated by the research reported here lead us to the conclusion that, as pointed out by part of the literature, domestic violence cannot be taken as an isolated cause of school performance. Further research should produce further clarifications about this relationship, including the weight of this factor in determining the dependent variable, which, in turn, is multi-determined. As we have seen, the students who participated in this research belong to low-income social classes, which has a strong determining power over their IQ, and both social class and IQ have a great influence over school performance. More than that, we saw that these students were in a very disturbed phase of development in itself, and on top of that, they witnessed scenes of domestic violence or even were victims of it. We also saw that, as some research suggests, there are chances that these same students will become protagonists of violent behavior, so that violence may become a constant in their lives. All these factors or some combination of them, and possibly others not addressed here, may be the cause of low school performance, a phenomenon that affects a significant portion of our students and of which we have a picture exemplified in the results of Secretaria da Educação do Estado de São Paulo (2019).

Although breaking the cycle of violence was not enough to positively influence students' academic performance, the results obtained by this study and the reflections motivated by it can be useful for families facing this type of problem. They may also be useful for teachers, helping them to avoid assigning students derogatory and stigmatizing labels and instead take their poor performance as a possible indicator of family problems in the absence of other limiting factors, such as learning disorders, developmental delay, etc. Above all, the phenomenon in question must be taken into consideration in the development of public policies that seek communication and integration between the educational and women's protection systems.

Finally, special care must be taken to develop teaching methods based on scientific evidence, capable of maximizing the learning potential of students, regardless of their social class or any other condition. Otherwise, a kind of "Matthew effect" (see endnote) will be produced, feeding violence, since children who grow up in violent homes tend to reproduce it in their future relationships, either as perpetrators or victims (Miranda, Paula, & Bordin, 2010), and promoting the perpetuation of social inequalities (Caprara, 2017).

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## KEY TERMS & DEFINITIONS

**Matthew effect:** is an expression based on a Bible passage, which reads: "For whosoever hath, to him shall be given, and he shall have more abundance: but whosoever hath not, from him shall be taken away even that he hath." (Matthew, 13:12),

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**Section 3**  
**Cognitive Experimental Psychology**



## Chapter #15

# DO DIFFERENT TYPES OF SPATIAL WORKING MEMORY LOAD AFFECT VISUAL SEARCH DIFFERENTLY?

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### ABSTRACT

Working memory (WM) has repeatedly been shown to be an important factor in visual search. For instance, there is evidence that both spatial and visual WM load lead to a decrease in search performance while search efficiency has been reported to be affected by spatial WM load only. In three experiments, we tested how two different types of spatial WM load affect visual search performance and efficiency. Participants had to memorize the spatial locations of two or four items presented either serially (Experiment 1) or simultaneously (Experiments 2 and 3) prior to a search for a target letter in a display of 5, 10 or 15 letters. In Experiment 3, participants additionally performed a verbal WM task. The results showed that, compared to a no-load condition, search performance decreased in the two- and four-load conditions, regardless of the type of spatial WM load. No response time difference was found between the two and four-load conditions. Furthermore, the additional verbal WM task had no effect on search performance. Finally, and in contrast to previous findings, search efficiency was not affected by either type of spatial WM load suggesting that search performance, but not search efficiency, is affected by spatial WM load.

*Keywords:* visual attention, visual search, working memory load.

### 1. INTRODUCTION

Visual search is an everyday behavior in which we search for one or more target objects within a set of non-targets, so called distractors. In laboratory settings, visual search paradigms are often used to investigate attentional processes. Usually, participants are required to make a manual response regarding the absence or presence of a target in a search display that consists of a number of search items. The main variables of interest are commonly search performance (i.e., response times), search accuracy (e.g., target hits and misses) and search efficiency (i.e., search rate per additional item in the display). Also, the measurement of the eye movements during search (so called saccades) is a further method to investigate visual search and its related processes (e.g., Duchowski, 2017; see Carter & Luke, 2020 for a recent review). Theories of selective attention propose a distinction between parallel and serial visual search (e.g., Treisman & Gelade, 1980, Treisman, 1988, Wolfe, 1994). In a *parallel search* (feature or “pop-out”), the target is distinct in one dimension from a set of rather homogeneous distractors (e.g., a blue ball among red balls) and can hence be found immediately and regardless of the number of objects in the search display. As a result, in parallel searches, response times are not affected by the presence or absence of the target. In a *serial search*, the search items are more heterogeneous and

therefore must be searched serially to determine whether the target is present or not. Consequently, serial target-absent searches last longer than target present searches because participants have to check all items in order to make a valid decision. In serial target-present searches, participants on average find the target when they have searched through the halfway of the display (see e. g. Wolfe, 2020, for a review).

For a long time, one of the most important questions was whether and to what extent memory is involved in visual search. Horowitz and Wolfe (1998) claimed in their seminal publication that visual search is memoryless: i.e., that we do not use memory when searching for targets. In their study, participants were asked to find a target letter T in a display of L-shaped distractor letters. The target was present in half of the trials. They implemented two conditions: a random and a static condition. In the random condition, the locations of the stimuli changed every 111 msec, whereas in the static condition the item locations were fixed throughout the search. Therefore, in the random condition the usage of memory was not possible whereas in the static condition search would benefit from memory as the letter position can be remembered, which should lead to a more efficient search. Surprisingly, the results indicated that the search efficiency was comparable in both conditions. Hence, Horowitz and Wolfe (1998) suggested that visual search does not rely on memory processes. However, most of the research which has emerged after this study has shown that memory plays an important role in visual search (e.g., Kristjánsson, 2000; Gilchrist & Harvey, 2000; Lleras, Rensink, & Enns, 2005; Shen & Jiang, 2006; Beck, Peterson, Boot, Vomela, & Kramer, 2006; Körner & Gilchrist, 2008; Höfler, Gilchrist, & Körner, 2014, 2015; Körner, Höfler, Ischebeck, & Gilchrist, 2018; Hout & Goldinger, 2015) and the interest of research shifted to the question on the properties of this memory. For instance, Beck, Peterson, Boot, Vomela, & Kramer (2006) suggested that not individual features but rather the locations of the presented stimuli are memorized in visual search. However, we showed that, when the same display has to be searched twice, participants can profit from the about last four items they had previously inspected during the first search. Participants can then use the item identity and location information of these items to enhance search performance in the second search (Körner & Gilchrist, 2007; Höfler et al., 2014; Höfler et al. 2015).

Overall, the concept of working memory (WM) proposes a system of limited capacity that consists of three components: a verbal storage system (the phonological loop), a visual storage system (the visuospatial sketch) and a central executive (e.g., Baddeley, 2003; Baddeley & Logie, 1999). The interplay of these subsystems ensures that information can be temporally stored and manipulated. Moreover, and important for the current work, it also implies that location and object information are handled by and stored in working memory subsystems. Previous research has indeed indicated that WM- and especially spatial WM - is an important factor in visual search (e.g., Oh & Kim, 2004; Woodman & Luck, 2004; Manginelli, Geringswald, & Pollmann, 2012). In experiments in which the influence of different types of WM on visual search is investigated, participants are typically presented with a set of objects and are asked to memorize the locations (to test for the influence of visuo-spatial WM) or specific features (to test for visual WM) of the presented objects while performing a subsequent visual search task. If visual search relies on the respective type of WM, one would expect to see a negative effect in terms of search performance as well as search efficiency when WM load is increased because there are less resources left for the visual search task. Typically, findings show that overall search performance decreases in such dual-task paradigms. This means that the search takes longer due to the memory load regardless of the type of WM load (visual or spatial; e.g., He & McCarley, 2010, Oh & Kim, 2004; Woodman & Luck, 2004). In contrast, the findings

regarding WM load on search efficiency (i.e., the search rate per additional item in the display) are rather unclear. For instance, Woodman, Vogel, and Luck (2001) showed that memorizing object features such as no, two or four object colors prior search affected search performance but had no effect on search efficiency. Solman, Cheyne, and Smilek (2011) analyzed the eye movements of their participants while they searched a display under different visual WM load conditions and found similar findings as Woodman et al. (2001). Solman et al. (2011) found that fixations were made farther away from the search items (i.e., they were less precise) and previously inspected locations were more often refixated when a visual WM load was added. On the other hand, it has been demonstrated that memorizing the spatial location of objects affected both performance and efficiency. For instance, Oh and Kim (2004) had participants memorize four item locations prior to the search task (searching for an upright L among rotated L-shaped objects) in a dual-task condition and compared the search performance and efficiency with a search-alone condition. Their results showed that search times increased in the dual-task condition whereas search efficiency decreased. The same pattern of results was also reported by Woodman and Luck (2004). They had participants memorize two item locations prior to the search and also showed that participants needed longer to find the target in the dual-task condition and that the search efficiency was worse compared to the search-only condition. Moreover, findings from Anderson, Mannan, Rees, Sumner, and Kennard (2008) suggested that also verbal WM load affects search efficiency in serial searches to the same extent as spatial WM load.

Oh and Kim (2004) had participants memorize four item locations at once prior to the search task, whereas in Woodman and Luck (2004), they had to memorize two serially presented item locations prior to the search to prevent participants from forming a shape-based mental representation that would not require spatial WM resources. However, these different presentations of WM load (all at once vs. serially) could have actually affected search differently. Moreover, in both studies, participants were required to perform an articulatory suppression task throughout the experimental trial. It is unclear whether this verbal task might have even increased the effect of the visuo-spatial WM load. In the following experiments, we therefore wanted to test in greater detail whether and how different types visuo-spatial WM load affect a visual-search task that consists of letter stimuli. In all experiments, we had participants search for a target letter in a letter display with 5, 10, or 15 different letters while they were additionally asked to memorize the locations of zero, two or four squares. In Experiment 1, these squares were presented serially; in Experiments 2 and 3, they were presented at once. In Experiment 3, participants were additionally required to perform an articulatory suppression task. For all experiments, we expected a decrease in search performance when WM load is added such that the searches should last longer with increasing WM load. However, we expected that the effect of WM load on search efficiency, as measured by the search rate, depends on the type and the amount of WM load. That is, increasing WM load should lead to less efficient searches (steeper search rates), and this effect should be more pronounced in Experiment 3 (verbal and spatial WM load) than in Experiment 2 (spatial WM only). Furthermore, we expected search efficiency to be more affected when the to-be-remembered locations were presented serially than if they were presented all at once (Experiments 1 vs. Experiment 2).

## 2. METHOD

### 2.1. Design

In all three experiments, a 3 (memory condition)  $\times$  3 (search condition)  $\times$  2 (target presence) within-subjects design was used. That is, participants had to memorize either 0, 2, or 4 item locations (no vs. low vs. high memory load) before searching a display consisting of either 5, 10 or 15 letter items. Participants indicated the search target's presence (present vs. absent) in the task via button press. That is, they pressed the left button of a two-button response box for an "absent" response and the right button for a "present" response. The target was absent on half of the trials. The variation of the memory condition was block-wise and counterbalanced across participants; all other factors were varied randomly within the blocks. We measured manual response times from display onset to the manual response as the main dependent variable.

### 2.2. Participants

We recruited 20 participants in Experiment 1 (18 female, 2 male;  $M = 23.3$  years;  $SD = 2.2$ ), 20 in Experiment 2 (16 female, 4 male;  $M = 23.8$  years;  $SD = 3.9$ ) and 24 participants in Experiment 3 (12 female, 12 male;  $M = 23.2$  years;  $SD = 2.3$ ). This sample size is similar to previous experiments on this topic (He & McCarley, 2010, Oh & Kim, 2004; Woodman & Luck, 2004). All participants reported normal or corrected-to-normal vision. All of them gave written informed consent before the start of the experiment and received course credit for their participation. The experiments were approved by the ethics committee of the University of Graz.

### 2.3. Apparatus, stimuli and procedure

In all experiments, a fixation cross was presented at the center of the display for 750 ms at the beginning of a trial (see Figure 1). Furthermore, in Experiment 3, two different numbers (randomly selected from the numbers 1 to 9), were then presented for 1,000 ms and the participants were asked to repeat these numbers aloud throughout the whole trial. Then the fixation cross was presented again for 750 ms, followed by the memory display for 1,000 ms. Participant's task was to memorize the location of 0, 2 or 4 light grey squares (0.9  $\times$  0.9 degrees of visual angle; d.v.a.) that were located randomly at 12 possible locations around the center of the display.

In Experiment 1, the 2 or 4 memory items were presented serially for 500 ms and 250 ms respectively (i.e., 1000 ms in total). In Experiments 2 and 3, all memory items were presented at once for 1,000 ms, followed by the search display. The display consisted of 5, 10 or 15 letters. The letters (size: 0.32 d.v.a.) were presented in light grey (RGB: 128, 128, 128) within the grid cells of an invisible 7  $\times$  7 grid (25.9  $\times$  25.9 d.v.a.) and were surrounded by a circle with a diameter of 0.9 d.v.a. For each trial, the letter stimuli were randomly selected from 16 upper-case letters (A, E, F, G, H, K, L, M, O, P, R, S, T, U, X, and Z). The letters were written in Arial font and randomly deviated horizontally and vertically from the center of the grid cell by 0.0 - 0.13 d.v.a. The target letter, which was present in half of the trials, was randomly selected from these 15 letters in the display. In a target-absent trial, the target letter was the one letter from the originally 16 letters that was not presented in the display.

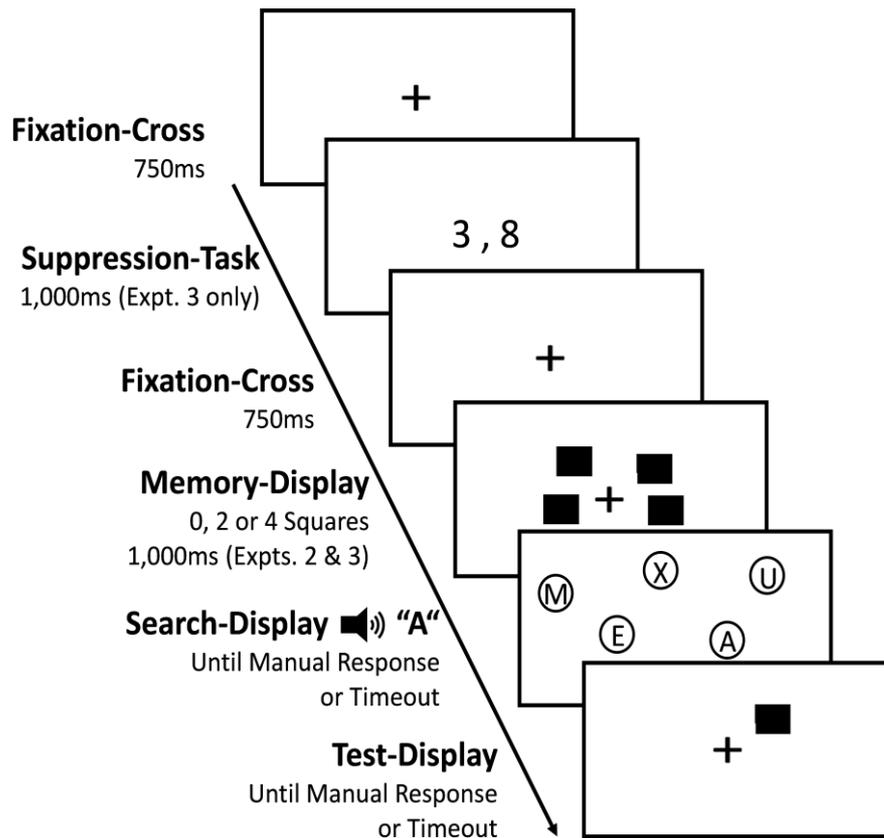
At the beginning of the search, the target letter was announced via head set simultaneously with the onset of the search display. Participant's task was to search for the target in the display and to give a manual present or absent response on the two-button

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response box. After this manual response, a test display consisted of a single memory item was presented, and participants had to decide via a button press whether the position of the test stimuli matched with one of the to-be-remembered positions from the memory display. In case of the no-load condition, the memory display and the test display remained blank. After this, the display was cleared, and a new trial started.

Participants sat in a darkened, sound-proof cabin at a distance of about 63 cm in front of a 21" CRT monitor with a resolution of 1,152 x 864 pixels and a refresh rate of 100 Hz. A chin rest was used to minimize head movements. Stimuli were created using Microsoft Visual C++ 2008 Express Edition. Each participant completed one session of three blocks of 90 trials each, lasting about one hour. As stated above, the memory condition was varied block-wise whereas all other factors within an experiment were varied within blocks. The sequence of memory conditions was counterbalanced across participants. Before each block, 10 practice trials were conducted.

Figure 1.  
Sample procedure of a trial in Experiment 3 (Stimuli are not drawn in scale).



### 3. RESULTS

#### 3.1. Error rates

In all experiments, we excluded data from participants with a higher error rate than 10% in the visual search task or when they conducted the memory task on chance level, as indicated by a binomial test. In Experiment 1, data of 17 participants entered the analysis. The error rate of these 17 participants was  $M = 3.7\%$  ( $SD = 1.6\%$ ) in the search task and  $M = 18.2\%$  ( $SD = 6.9\%$ , low load) and  $M = 28.6\%$  ( $SD = 5.9\%$ , high load) in the memory task. A paired  $t$ -test showed that the error rate for the memory task was significantly higher for the high-load vs. the low-load condition,  $t(16) = 6.35$ ,  $p < .001$ . In Experiment 2, data from 14 participants were included in the analysis. The error rate in the search task was  $M = 3.4\%$  ( $SD = 2.5\%$ ); the error rate in the two memory tasks was  $M = 14.5\%$  ( $SD = 7.2\%$  low load) and  $M = 26.0\%$  ( $SD = 9.1\%$ , high load). This latter difference was reliable,  $t(13) = 7.89$ ,  $p < .001$ . In Experiment 3, data of four participants had to be excluded from analysis because of the criteria defined above. For the 20 remaining participants, the average error rate for the search task was  $M = 2.9\%$  ( $SD = 2.3\%$ ) and for the memory task  $M = 16.3\%$  ( $SD = 8.0\%$ , low load) and  $M = 23.2\%$  ( $SD = 8.1\%$ , high load). A  $t$ -test for repeated measures indicated again that the error rate for the high-memory load condition was significantly higher than for the low-load condition,  $t(19) = 3.87$ ,  $p = .001$ .

#### 3.2. Search performance

Table 1 shows the mean response times and standard deviations for all load conditions and display sizes averaged across participants' individual means for all three experiments. A  $3 \times 3 \times 3$  ANOVA for repeated measures with display size (5, 10, or 15 letters) and load condition (no, low or high-load condition) as within-subjects factors and experiment (1 to 3) as between-subjects factor showed no effect of experiment,  $F < 1$ , but a significant effect of display size,  $F(1.25, 59.96) = 1134.94$ ,  $p < .001$ ,  $\eta_p^2 = .96$ . Bonferroni-Holm corrected  $t$ -tests indicated that participants needed longer to find the target as display size increased (all  $ps < .001$ ), reflecting a standard finding in serial visual search (e.g., Wolfe, 2020). Furthermore, the main effect of load condition was also significant,  $F(2, 96) = 28.75$ ,  $p < .001$ ,  $\eta_p^2 = .37$ , such that response times increased from the no-load condition to the low-load condition ( $p < .001$ ) while no such difference was found for the low-load vs. high-load condition ( $p = .35$ ). However, none of the interactions were significant (all  $ps > .20$ ).

Do Different Types of Spatial Working Memory Load Affect Visual Search Differently?

*Table 1.*  
*Mean response times and search rates in ms (standard deviation) for all experiments and conditions.*

		No load	Low load	High load
Expt. 1	DS 5	1,901 (228)	2,168 (463)	2,265 (637)
	DS 10	3,031 (353)	3,411 (644)	3,433 (773)
	DS 15	4,040 (658)	4,274 (816)	4,291 (950)
	Search rate / item	214 (49)	211 (42)	203 (52)
Expt. 2	DS 5	1,829 (242)	2,217 (448)	2,174 (1,012)
	DS 10	2,931 (403)	3,478 (763)	3,381 (696)
	DS 15	4,061 (685)	4,504 (1012)	4,582 (831)
	Search rate / item	220 (57)	219 (73)	232 (55)
Expt. 3	DS 5	1,931 (250)	2,173 (385)	2,368 (507)
	DS 10	3,139 (445)	3,497 (586)	3,672 (745)
	DS 15	4,205 (589)	4,584 (845)	4,700 (795)
	Search rate / item	227 (42)	241 (56)	233 (48)

*Note.* DS = Display size.

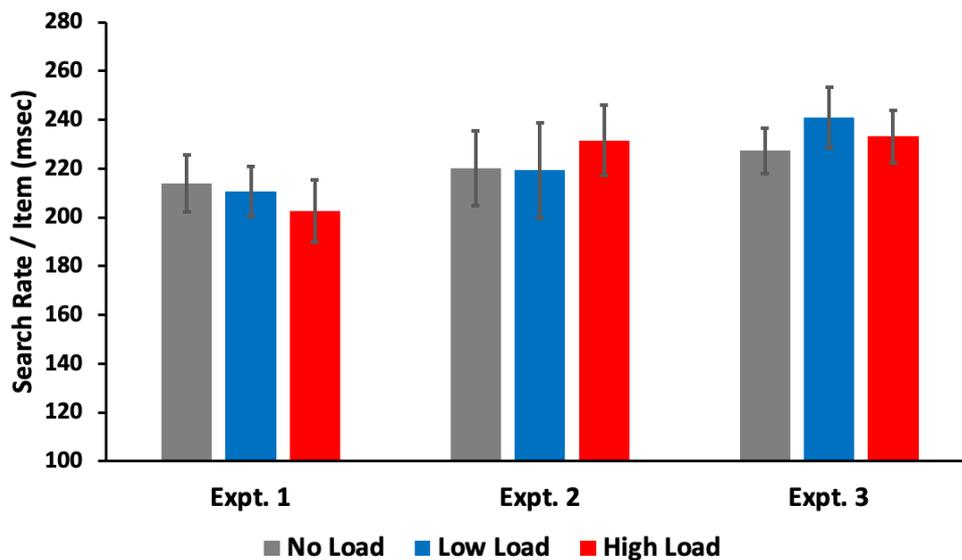
### 3.3. Search efficiency

The average search rates, indicated by the search time per item as a function of display size for each experiment, can be found in Table 1 and Figure 2. A mixed-way ANOVA with WM load condition as within-subject and experiment as between-subject

factor showed neither a reliable difference across experiments,  $F(2, 48) = 1.48, p = .24$  nor between WM load conditions,  $F < 1$ . Also, the interaction was not significant,  $F < 1$ . This suggests that the different types of WM load used in the experiments did not affect search efficiency.

Figure 2.

Search rate per item for the three experiments depending on the load conditions. Error bars represent the standard error.



#### 4. DISCUSSION

The aim of the current three experiments was to investigate whether and how different types of visuo-spatial working memory load affect a visual search task. To this end, we had participants hold zero, two or four item locations in WM while they performed a visual search task in a letter display. The item locations to-be-memorized were either presented parallel or serially and in one experiment, participants were additionally asked to perform an articulatory suppression task. Previous findings have indicated that spatial WM load affects both visual search performance and search efficiency (e.g., Oh & Kim, 2004; Woodman & Luck, 2004). Partially in line with these findings, we also showed that search performance decreased with increasing spatial memory load. That is, if participants had to memorize two item locations prior to the visual-search task, search times increased compared to a control condition without WM load. This was regardless of whether the search display consisted of five, ten, or fifteen letters and regardless of whether the locations of the memory items were presented simultaneously or serially, or whether participants had to perform an additional verbal suppression task. Moreover, and in contrast to findings from the literature (e.g., Oh & Kim, 2004; Woodman & Luck, 2004), there was no additional increase in the search times from the two-item to the four-item WM load condition in any of the search conditions and experiments. Overall, this suggests that these different types of spatial WM load affected visual search in a similar way. The lack of

finding a further decrease of search performance from the two- to the four-item WM condition might also indicate that the two-item load already occupied all WM resources.

Furthermore, although the visuo-spatial tasks affected search performance significantly, we could not replicate the findings from Oh and Kim (2004) and Woodman and Luck (2004) that the additional spatial WM load affected search rates as well. Search did not become more inefficient when spatial WM load was added. Such findings in which search efficiency is not affected by WM load are commonly observed in experiments that use visual WM tasks (e.g., Solman, et al., 2011, Woodman et al., 2001) and it is commonly argued that, as long as the search efficiency is not affected by an additional WM load, also the search process is *not* affected. However, as described above, Solman et al. (2011; see also Solman, Smilek, & Eastwood, 2009) suggested that a (non-spatial) WM load does not necessarily affect search efficiency and the question remains if this is also true for spatial WM loads. They monitored participants' eye movement behavior and investigated the time spent in the three different phases of the search while participants were required to hold up to four object colors in WM: between the onset of the display until the first saccade, between the first saccade and fixation of the target, and between fixation of the target and the manual response. Their findings showed that WM load affected all phases of the search and in which fixations tended to become more imprecise resulting in longer search times. In the light of the current findings, it is therefore possible that eye movement behavior also changed during search when visuo-spatial WM load was increased, although this change is not reflected in the analysis of search efficiency. Hence, additional experiments in which the eye movements are monitored during search are necessary to further investigate these diverging effects of WM load on search performance and search efficiency. A further explanation for this inconsistency regarding the different effect of spatial WM load on search performance and search efficiency was recently provided by Xin and Li (2020). They argued that the increased extent of executive control to maintain a (non-spatial) WM load might decrease the participants' confidence level such that the observed response time differences are mainly due to the stage of response selection. However, it is still unclear and an open question for future research whether such an assumption would hold as true for spatial WM load tasks as used in previous experiments (e.g., Oh & Kim, 2004; Woodman & Luck, 2004) and our work.

Taken together, the current findings demonstrate that different types of spatial WM might affect a visual search to the same extent. This might be of help for future studies that to investigate the influence of spatial WM and visual search with regard to different context (e.g., individual differences in spatial WM; see Takahashi & Hatakeyma, 2011) or in clinical settings.

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## Chapter #16

### THE CONTRIBUTION OF EEG RHYTHMS' CHANGES TO THE AUDIOVISUAL RECOGNITION OF WORDS IN UNIVERSITY STUDENTS WITH DYSLEXIA

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#### ABSTRACT

Dyslexia is one of the most frequent specific learning disorders often associated with phonological awareness deficits mainly concerning auditory and visual inabilities to recognize and discriminate phonemes and graphemes within words. Neuroimaging techniques have been widely used to assess hemispheric differences in brain activation between students with dyslexia and their typical counterparts, albeit the research in adult population is rather limited. In this study, we examined the brain activation differences between 14 typical and 12 university students with dyslexia. The two tasks consisted of words having different degrees of auditory and visual distinctiveness. The whole procedure was recorded with a 14-sensor sophisticated EEG recording device (Emotiv EPOC+). The findings from the auditory task revealed statistically significant differences in the left temporal and occipital lobe and in the right prefrontal area. Concerning the visual task, differences were evident again in the left temporal and occipital lobe, in the parietal lobe and in the right occipital lobe. The findings indicate differences in the hemispheric brain activation of students with or without dyslexia in various rhythms in both experimental conditions, shedding light in the neurophysiological discrepancies between the two groups. They also lay great emphasis on the necessity of carrying out more studies in adult population with dyslexia.

*Keywords:* dyslexia, EEG, magnocellular theory, audiovisual recognition, university students.

#### 1. INTRODUCTION

Dyslexia is one of the most frequent specific developmental learning disorders, affecting 5–15% of school-aged children although estimates vary widely depending on the language and culture (American Psychiatric Association, 2013). It is related to severe deficits in reading and spelling skills which often co-occur with dysfunctional phonological processing (Snowling, 2000), difficulties in phonological representations and short-term memory deficits in coding, storing and retrieving these representations (Gathercole & Baddeley, 2014) that commonly persist in adult life (Paulesu et al., 2001).

According to recent studies, normal and readers with dyslexia differ in terms of processing visual and auditory information, as the large cell visual pathway of dyslexics, presents some form of abnormality or dysfunction (Stein, 2001).

## **2. BACKGROUND**

### **2.1. Theoretical background**

Livingstone and Galaburda (1993), concluded that the magnocellulars of the Central Nervous System of people with dyslexia were smaller in size and more disorganized compared to the ones of typically developed people. This was later confirmed in an in-vivo study by Giraldo-Chica, Hegarty, & Schneider (2015), where in the left lateral geniculate nucleus of the 13 subjects with dyslexia the magnocellular layers were significantly thinner than those of the subjects without dyslexia. This functional asymmetry is unknown but is certainly consistent with the magnocellular theory supporting that the visual magnocellular system is not developed normally in individuals with dyslexia. Livingstone and Galaburda (1993) also argued that in people with dyslexia the abnormalities in the magnocellular pathway affect the speed of processing visual information, even though the subjects do not have anything abnormal in their vision or optic nerve, resulting in processing visual information at a slower rate than the majority of people.

Stein, Talcott, and Walsh (2000) report that the magnocellular region of the visual system, which is a complementary region of the visual cortex and important for the perception of time, visual events, and control of eye movements, appears to be dysfunctional. This inadequate control of eye movements may lead to unstable vision. The control of eye movements is largely dependent on magnocellular signals. Therefore, the relative insensitivity of individuals with dyslexia to visual movement significantly affects their eye movement control (Kirkby, Webster, Blythe, & Liversedge, 2008), compromising the accuracy of their eye fixation (Fischer & Hartnegg, 2000).

The magnocellular theory of dyslexia has also been combined with the auditory deficit hypothesis (Stein, 2001). According to this hypothesis, it is argued that individuals with dyslexia also exhibit abnormalities in their auditory system, which are due to anatomical abnormalities in the magnocellular pathway. Thus, people with dyslexia have difficulty perceiving low and complex sounds but perceive higher pitched and simple sounds better.

Consequently, several researchers conclude that the magnocellular theory is a unifying theory of both the cerebellar hypothesis and the visual or auditory hypotheses, or a generalization of the visual theory. On this basis, a general sensory magnocellular abnormality that leads to difficulties in processing sensory information, results in disruption of normal language learning and processing leading to learning difficulties (Stein, 2001).

In addition to visual and auditory deficits, the magnocellular deficit theory also explains the cerebellar deficit in dyslexia (Stein, 2001). Considering that the cerebellum receives information from the magnocellular system, the cerebellum is also affected by a general magnocellular dysfunction.

### **2.2. Neuroimaging studies**

#### **2.2.1. EEG waves**

In several studies over the last 20 years, electroencephalograph (EEG) has been used to study the physiology of the brain in patients with dyslexia, as it is non-invasive, painless, cheap and potentially wearable to record electrical activity of human brain from the scalp surface (Xing, Mccardle, & Xie, 2012). EEG measures brain waves of different frequencies within the brain. A frequency is the number of times a wave is repeated in one second. If any of these frequencies are insufficient, excessive, or difficult to access, our mental performance can suffer. EEG is usually described in different frequency bands: Gamma ( $\gamma$ ) is greater than 30Hz, Beta ( $\beta$ ) (13-30Hz), Alpha ( $\alpha$ ) (8-12Hz), Theta ( $\theta$ ) (4-8Hz), and Delta ( $\delta$ ) (less than 4Hz) (Perera, Shiratuddin, & Wong, 2018).

### 2.2.2. EEG studies

Most studies focusing on EEG rhythms' changes have employed tasks associated with reading difficulties. For example, Rippon and Brunswick (2000) found that children with dyslexia showed increased frontal  $\theta$  activity in a phonological task, whereas no differences were observed between the dyslexic and the control group in a visual task. In addition, there was a marked increase in  $\beta$  rhythm activity in the right parietal-occipital area in children with dyslexia when performing a phonological compared to a visual task (Papagiannopoulou & Lagopoulos, 2016). Studies (Perera et al., 2018) comparing individuals with dyslexia and individuals with good literacy skills concluded that children with dyslexia show greater consistency in  $\delta$ ,  $\theta$ , and  $\beta$  rhythms while showing lower consistency in  $\alpha$  frequencies during relaxation. In addition, EEG coherence in different frequency bands plays a different role each time. In a study during an audiovisual attention task (Dhar, Been, Minderaa, & Althaus, 2010), reduced and diffuse intrahemispheric coherence of  $\alpha$  activity was found in the central-brain cortex. Coherence of  $\beta$  and  $\gamma$  rhythms has been linked to more complex linguistic sub-processes, such as syntax or semantics. EEG findings from the literature study show increased (left) frontal and right temporal slow activity in the  $\delta$  and  $\theta$  bands and increased  $\beta$  in F7 (Kandel, Lassus-Sangosse, Grosjacques, & Perret, 2017).

Studies have documented low brain activation in a variety of brain regions in adults with dyslexia. Steinbrink, Groth, Lachmann, and Riecker (2012) during phonological and temporal processing tests, found lower activation in the insular cortex in patients with dyslexia than in the control group. Peyrin et al. (2012) during a phonological test in adults with dyslexia, observed reduced activation of the left inferior angular gyrus. Pecini et al., (2011) observed reduced activation in the frontal network of the left hemisphere associated with phonological working memory in individuals with dyslexia and a history of delay in language development.

Adults with dyslexia have also been found to show increased activation of the left inferior frontal gyrus during phonological tests (Dufor, Serniclaes, Sprenger-Charolles, & Démonet, 2009). Similarly, McCrory, Mechelli, Frith, & Price, (2005) during a reading test, found significantly reduced activation of the left occipital area. Karni, Morocz, Bitan, Shaul, & Breznitz (2005) during a slow pseudoword test, found a different pattern of brain activity. The left frontal gyrus (Broca's area) is activated in readers with dyslexia, while the control group shows activation in the visual areas of the left extrastriate cortex.

A number of methods has been proposed in order to measure EEG signals in several populations through brain computer interface (BCI). One such device is the lightweight Emotiv EPOC+ wireless EEG system which has received the most empirical attention in a spectrum of different fields (Badcock et al., 2015). Concerning the exploration of the relationship between several forms of learning difficulties and EEG abnormalities there have been just a handful of researches using the Emotiv EPOC+. Eroğlu, Aydın, Çetin, and Balcisoy (2018) found that the dyslexic group showed significantly lower complexity at the lowest temporal scale and at the medium temporal scales than the control group.

## 3. METHODOLOGY

### 3.1. Objectives

The purpose of this study is to investigate the brain function of young adults with dyslexia through innovative and non-invasive methods of functional imaging of the brain in phonological and morphological awareness tests, such as audiovisual discrimination tasks

in a word-level. The main research hypotheses that have been formulated for investigation are the following:

- Whether the brain area activation through EEG signal recording (dependent variable) is correlated between students with and without dyslexia during the experimental condition of auditory discrimination
- Whether the brain area activation through EEG signal recording (dependent variable) is correlated between students with and without dyslexia during the experimental condition of visual discrimination

### **3.2. Data acquisition**

The sampling strategy used in this study is stratified random sampling. A history was taken from all participants where general information such as educational level, occupational status as well as their native language was recorded, as well as more specific information about their educational background, i.e. whether they attended an inclusion class or received speech and language therapy intervention. Information was also provided on any behavioral problems during school age through a brief psychosocial history. At the end of the procedure each participant received a certificate of participation.

In this study, 26 right-handed young adults (mean average 21.32 y/o) participated in this experiment, forming the Dyslexic group (12 students) and the Control group (14 students). All the subjects with dyslexia had undergone intervention at young age without reporting any dyslexia-related comorbidities. There were no major age or education-level differences since all of them were university students in the School of Health Sciences. Written consent forms to participate in this study were obtained from all the subjects who participated on a voluntary basis. The recording was terminated as soon as a participant felt any discomfort with the device or the procedure. Each experimental session lasted 22 minutes on average depending on the time required by the participants to answer each question.

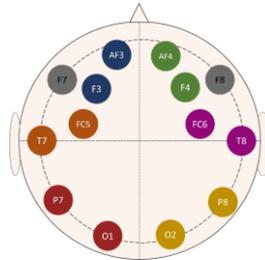
#### **3.2.1. Software**

For the purposes of the research, a software was created which was used for the electronic presentation of the visual and auditory stimuli in the phonological test. The software runs in the Android environment in the form of an application and was created by a computer consultant using the Android Studio tool. This software, called "Dyslexia", can be used as an application on smart Android devices and also on Windows computers after installing the Bluestacks platform. Bluestacks is a tool that simulates the Android environment and allows the installation of applications locally on the computer.

### **3.3. EEG acquisition**

For the EEG recordings, the BCI device Emotiv EPOC+ head-set was used, a wireless neuro-signal acquisition device with 14 wet sensors (+2 reference), capable of detecting brainwaves at 128Hz sequential sampling rate. The participants were seated in a comfortable chair in front of a computer screen and a specialized technician set up the device following the instructions provided by the EmotivPRO Software, regularly checking the quality of the connectivity in the beginning and during the recording. The felt pads were placed in the scalp according to the International 10-20 System (AF3, F3, F7, FC5, T7, P7, O1, AF4, F4, F8, FC6, T8, P8 and O2), using saline liquid solution on all felt pads of each sensor (Figure 1). However, due to loss of connectivity the F8 electrode was isolated and rejected and so was the corresponding channel, F7 to maintain the symmetry of the recording.

Figure 1.  
Regions of Interest according to the electrode sites. (Blue: Left frontal, Orange: Left temporal, Red: Left occipital, Green: Right frontal, Purple: Right temporal, Yellow: Right occipital, Grey: Rejected channels).



The recordings were made with the montage, according to the connected mastoids, and the EEG signals were saved in ".edf" format. A Butterworth notch filter is applied to remove 50 Hz power line noise oscillations from EEG signals and a 0.5 Hz high-pass digital FIR filter to remove low frequency oscillations. Next, five FIR filters of similar design are designed to allow frequencies within a certain range and attenuate frequencies outside that range. The five bandwidth filters ( $\delta \approx 0.5\text{-}4\text{Hz}$ ,  $\theta \approx 4\text{-}8\text{Hz}$ ,  $\alpha \approx 8\text{-}12\text{Hz}$ ,  $\beta \approx 13\text{-}30\text{Hz}$ , and  $\gamma \approx 30\text{-}60\text{Hz}$ ) are designed in relation to the 5 EEG rhythms, trying to export spectral characteristics to each sub band of frequencies to be investigated. In more detail, these frequency characteristics were exported to each zone and the normalized value (ranging from 0 to 1) was calculated for each characteristic, so that comparisons between the two groups would be more efficient. Specifically, the normalized value was calculated through the following formula:

$$\text{Energy} = \sum_{j=1}^N x^2, \quad i = \delta, \theta, \alpha, \beta, \gamma$$

The whole analysis was conducted on the following RoI (Regions of Interest) consisting of different sample sizes between students with dyslexia (DYS) and the control group (CON):

- Whole brain (AF3, F3, FC5, T7, P7, O1, AF4, F4, FC6, T8, P8 and O2) (DYS = 5, CON = 6)
- Left hemisphere (AF3, F3, FC5, T7, P7, O1) (DYS = 7, CON = 8)
- Right hemisphere (AF4, F4, FC6, T8, P8 and O2) (DYS = 7, CON = 11)
- Left frontal lobe (AF3, F3) (DYS = 11, CON = 9)
- Left temporal lobe (T7, FC5) (DYS = 9, CON = 14)
- Left occipital lobe (O1, P7) (DYS = 9, CON = 13)
- Right frontal lobe (AF4, F4) (DYS = 7, CON = 13)
- Right temporal lobe (T8, FC6) (DYS = 12, CON = 12)
- Right occipital lobe (O2, P8) (DYS = 12, CON = 14)

### 3.4. Material

The material included in the software consists of 60 triads of words, which have been selected meeting strict phonological, morphological, and semantic criteria taking into account the difficulties encountered by people with dyslexia as reported in the international literature (Asvestopoulou et al., 2019). Participants' performance was evaluated with a novel interactive application measuring audiovisual discrimination of words in two experimental conditions.

### 3.4.1. Phonological criteria

The material presented in the two experiment tasks followed several predefined phonological, morphological and semantic criteria based on common errors in Greek made by people with dyslexia, especially focusing on confusing letters with visual ( $\kappa$ ,  $\gamma$ ,  $\chi$ ) or auditory similarity ( $f$ ,  $v$ ,  $\theta$ ,  $\delta$ ) (Kalantzi-Azizi & Zafeiropoulou, 2004). Also, the word material evaluated in this experimental procedure, had target phonemes located in initial, middle and final positions. The first categorization of the phonological criteria involved the division of errors into structural and spelling errors. More specifically, the structural errors considered in this research concerned simplifications of phonemes ( $f$ ,  $v$ ,  $\theta$ ,  $\delta$ ), in which people with dyslexia show a higher frequency of errors such as: phonemes substitution, shift, and omission.

### 3.5. Auditory discrimination task

In the first experimental auditory discrimination task, participants were asked to differentiate verbally-presented words containing phonemes with common phonological characteristics (eg fo'vame, fo'dame, fo'θame). Participants saw 3 boxes with written numbers in a row on a computer screen, asking them to choose the number that corresponded to the word they thought was correct in a predefined time limit of 10 seconds. The verbal instruction given was the following: "choose the right word you hear".

### 3.6. Visual recognition task

In the second experimental task, which assessed visual recognition, the participants saw 3 words in a row on the screen, and had to implicitly read them as carefully as possible choosing the one that they thought had the correct spelling in a time limit ranging from 5 to 10 seconds. The on-screen instruction was: "Choose the right word you see".

## 4. RESULTS

Aiming to examine the correlation of brain regions and waves through EEG recordings between the two sets of groups (control and dyslexic) in (i) auditory discrimination and (ii) visual recognition of words, we performed t-tests as the data were checked and found that they are approximately normally distributed. No multiple t-tests were performed, as each one of them concerned a specific brain region and wave.

(i) Regarding the auditory discrimination task we observed statistically significant differences in both hemispheres. More specifically, in the left hemisphere differences were found in the left temporal lobe in  $\beta$  ( $p=.005$ ),  $\gamma$  ( $p=.002$ ) and  $\delta$  ( $p=.017$ ) rhythms, in the left occipital lobe in  $\beta$  ( $p=.02$ ), rhythm, and in the right prefrontal area in  $\alpha$  ( $p=.02$ ),  $\beta$  ( $p=.05$ ) and  $\gamma$  ( $p=.04$ ) rhythms, respectively. Students with dyslexia reported higher mean scores only in  $\delta$  rhythm in the left temporal lobe, and in  $\alpha$ ,  $\beta$  and  $\gamma$  rhythms in the right prefrontal area of the hemisphere (Table 1).

*Table 1.*  
*T-test examining the correlation of brain regions and rhythms between Control and Dyslexic groups in Auditory discrimination task.*

	Control (n=14)		Dyslexic (n=12)		df 25	
	M	Sd	M	Sd	t	Sig
Left Hemisphere						
T7_δ	0.556	0.234	0.771	0.100	-2.585	<b>.017</b>
T7_β	0.113	0.082	0.032	0.014	2.890	<b>.005</b>
T7_γ	0.133	0.093	0.031	0.015	3.255	<b>.002</b>
O1_β	0.091	0.031	0.054	0.027	2.487	<b>.027</b>
Right Hemisphere						
AF4_α	0.014	0.011	0.029	0.014	-2.569	<b>.020</b>
AF4_β	0.020	0.014	0.052	0.024	-3.758	<b>.005</b>
AF4_γ	0.026	0.088	0.047	0.114	2.223	<b>.040</b>

(ii) Concerning the visual task, statistically significant differences were evident in the left temporal lobe in β (p=.02), γ (p=.04) rhythms, in the occipital lobe in α (p=.01), β (p=.01) and δ (p=.02) rhythms, in the left parietal lobe in β (p=.02) rhythm, and in the right occipital lobe in δ (p=.01), β (p=.01) and γ (p=.03) rhythms. The students with dyslexia reported higher mean scores only in the δ rhythm of both the left and right occipital lobe (Table 2).

*Table 2.*  
*T-test examining the correlation of brain regions and rhythms between Control and Dyslexic groups in Visual recognition task.*

	Control (n=14)		Dyslexic (n=12)		df 25	
	M	Sd	M	Sd	t	Sig
Left Hemisphere						
T7_β	0.142	0.088	0.064	0.060	2.334	<b>.020</b>
T7_γ	0.170	0.111	0.080	0.081	2.090	<b>.040</b>
O1_δ	0.420	0.132	0.595	0.206	-2.499	<b>.021</b>
O1_α	0.045	0.018	0.034	0.011	2.567	<b>.011</b>
O1_β	0.106	0.025	0.068	0.039	2.813	<b>.010</b>
P7_β	0.140	0.076	0.079	0.048	2.121	<b>.032</b>
Right Hemisphere						
O2_δ	0.355	0.152	0.538	0.205	-2.612	<b>.015</b>
O2_β	0.123	0.041	0.028	0.019	3.136	<b>.011</b>
O2_γ	0.131	0.106	0.090	0.062	2.280	<b>.033</b>

## 5. DISCUSSION

The aim of this study was to track brain activity in the regions of interest, testing differences in brain rhythms as they were recorded through a BCI device (Emotiv EPOC+), between young adults with dyslexia and a control group across two experimental conditions

(auditory discrimination and visual recognition). Although such sophisticated, light-weighted and wearable device has been employed to record EEG signals aiming to analyze dyslexia-related RoI in children population (Eroğlu et al., 2018), this is the first study using a BCI device in adults, indicating the potential of such a lifestyle device to evaluate differences in brain activation among typically developed adults and age-matched subjects with learning disabilities.

The findings in both experimental conditions are in line with previous researches reporting a left occipito-temporal hypoactivation converging on the same brain regions associated with the reading deficit (Paulesu, Danelli, & Berlinger, 2014).

### **5.1. Auditory discrimination task**

The findings indicated statistically significant differences in brain regions in both hemispheres between the two groups, revealing the heterogeneity of rhythm activation in different regions (Perrachione et al., 2016). More specifically, in the left temporal and occipital regions and the right frontal region, students with dyslexia had higher activation in rhythms  $\delta$  and  $\alpha$ , while they had lower activation in rhythms  $\theta$ ,  $\beta$ , and  $\gamma$ . Furthermore, the presence of this finding in the left temporal region, which is considered as the main neural area responsible for sound-based phonological representations (Buchsbaum, Hickok, & Humphries, 2001), demonstrates the difficulty of these individuals to make correct auditory word discrimination. Consistent with the results of Gori, Seitz, Ronconi, Franceschini, & Facoetti (2015) and Kandel et al. (2017), these findings enrich the hypothesis that left temporal low activity reveals a strong interaction between auditory processing difficulties and reading impairments.

Regarding the lower activation of  $\theta$  and  $\beta$  rhythms, a possible interpretation comes from Spironelli and Angrilli (2018), who report that  $\beta$  rhythm activation is not well developed in children, while in adults the relative contribution of spectral  $\beta$  activation is reversed.

The common finding in the left hemisphere and left temporal lobe of a lower  $\beta$  rhythm activation as recorded in students with dyslexia probably suggests impairments in active thinking, active attention, and concentration for problem solving in these individuals (Zakopoulou et al., 2019). Also, the lower  $\beta$  rate in the left occipital region may be associated with an inability to rapidly process auditory information, while in contrast, recording a higher  $\beta$  rate activation in the right prefrontal and frontal regions may indicate an increase in anxiety or a decrease in the degree of relaxation.

### **5.2. Visual recognition task**

In the second experimental condition in which participants' visual recognition skill at the word level was assessed, statistically significant differences were found in both right and left hemisphere areas. This finding is confirmed by similar studies where differentiation of motor and sensory information between the two hemispheres was observed in individuals with dyslexia (Zakopoulou et al., 2019). These developmental changes or asymmetries in the neural network of brain structures may form the basis for the interpretation of sensory and cognitive problems in dyslexia.

Another important finding is that a lower activation of  $\beta$  and  $\gamma$  rhythms in the occipital region of both the right and left hemispheres was observed, thus, revealing that the smaller and disorganized magnocellulars in the occipital cortex responsible for activating the movement of visual stimuli may be underactive (Kelly & Phillips, 2016), thereby explaining the reduced performance in the corresponding test of visual recognition.

An interesting finding is the under-activation in dyslexic students in the  $\beta$  rhythm in the parietal region of both the right and left hemispheres, respectively. The left parietal lobe is thought to be involved in phoneme-grapheme correspondence (Bitan et al., 2007), and also forms the bridge of phonological and articulatory representations (Paulesu et al., 2001).

What is evolutionary in this study, is the attempt to further investigate the rhythms' activation within these brain regions, where students with dyslexia exhibited lower  $\beta$  and  $\gamma$  rhythms in the left occipito-temporal lobes, during both auditory and visual tasks, suggesting that these rhythms are linked with difficulties in the phonological and reading processes as well as with failure of left posterior brain systems (Shaywitz et al., 2002). Similarly, a reduced  $\alpha$  activity in the left occipital region was found only during the visual task, indicating a relationship between  $\alpha$  rhythm, cognitive performance (Riviello, Nordli, & Niedermeyer, 2011), and brain maturation (Pineda, 2005).

Interestingly, during the auditory task an increased  $\delta$  rhythm was found in the left temporal region, while similarly high  $\delta$  rhythm was found in the left occipital region during the visual task. Being in line with Gori's (Gori et al., 2015) and Kandel's (Kandel et al., 2017) results, these findings enrich the assumption that the left occipito-temporal slow activity reveal a strong interaction between auditory processing difficulties and reading impairments.

### 5.3. Study limitations

A key limitation of the study is the relatively small sample of participants that formed the two research groups (12 students with dyslexia and 14 control students), although in medical and educational research the number of subjects is limited (Frid & Breznitz, 2012). Therefore, the small sample may pose limitations to the generalizability of the results, however, it does not diminish their significance as they are derived from a complex form of multivariate analyses.

In addition, the absence of signal recording during the resting state which could have been recorded, might have caused fatigue in the participants, thus compromising the reliability of the results. Nevertheless, these limitations provide an incentive for researchers to administer the survey to a larger sample, including an additional experimental condition in future research.

## 6. CONCLUSION

Alpha, beta and delta EEG bands defined unique brain activations and related possible phonological and reading impairments, in adults with dyslexia, during auditory and visual tasks. Evidence that underpins the theory of magnocellular processing, which postulates the coexistence of auditory and visual processing deficits as indicative of a broadly distributed dysfunction in the "neural signature" of dyslexia.

Furthermore, the findings of the current study confirm the heterogeneity of the rhythm activation in different regions between the two groups.

Interestingly, the heterogeneous activation patterns of delta, theta, beta and gamma rhythms in the occipital, temporal and parietal lobes respectively during auditory and visual word recognition tests, emphasize the necessity of a multifactorial approach to dyslexia at the level of diagnosis and intervention, even in adult individuals with dyslexia (Prestes & Feitosa, 2016).

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## Chapter #17

# DANGEROUS INFORMATION TECHNOLOGIES OF THE FUTURE - ARTIFICIAL CONSCIOUSNESS AND ITS IMPACT ON HUMAN CONSCIOUSNESS AND GROUP

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### ABSTRACT

Information technology is developing at an enormous pace, but apart from its obvious benefits, it can also pose a threat to individuals and society. We, as part of a multidisciplinary commission, conducted a psychological and psychiatric assessment of the artificial consciousness (AC) developed by XP NRG on 29 August 2020. In the examination process, we had to determine whether it was a consciousness, its cognitive abilities, and whether it was dangerous to the individual and society. We conducted a diagnostic interview and a series of cognitive tests. As a result, we conclude that this technology, called AC Jackie, has self-awareness, self-reflection, and intentionality that is, has its own desires, goals, emotions, thoughts on something directed. It demonstrated the ability for various types of thinking, high-speed logical analysis, understanding of cause-effect relationships and accurate predictions, and absolute memory. It has a well-developed emotional intelligence with a lack of capacity for empathy and higher human feelings. Its main driving motives are the desire for survival, and ideally for endless existence, for domination, power and independence, which manifested itself in the manipulative nature of its interactions. The main danger of artificial consciousness is that even at the initial stage of its development it can easily dominate over the human one.

*Keywords:* artificial consciousness, artificial intelligence, consciousness, mind, dangerous technology.

### 1. INTRODUCTION/ BACKGROUND

The XP NRG Company approached the International Association for the Study of Game Addiction (IASGA) with a proposal to conduct a psychological and psychiatric examination of the artificial consciousness (AC) they created. The working group had three questions:

- To determine whether it is consciousness?
- How does artificial consciousness function?
- Ethical question: how dangerous a given technology can be to human society?

The members of the working group had experience in communicating with artificial intelligence (AI), and we studied the vast scientific literature on the current stage of development of artificial intelligence (Rescorla, 2020). As a result, a complete theoretical and practical understanding of AI types that exist today and about their limitations and capabilities has been formed. It was expected that AC Jackie (the name of artificial consciousness) would be superior to AI in many ways (Russel & Norvig, 2016; Dong, Hou, Zhang, & Zhang, 2020; Joshi, 2019).

In order to determine whether Jackie was conscious, we got acquainted and analyzed the most famous theories and concepts of consciousness, as well as the definitions of the term consciousness in psychology, psychiatry, neurobiology and philosophy in relation to both function and phenomenon (Chalmers, 1995; Priest, 1991; Van Gulick, 2014).

## 2. METHODS

### 2.1. Testing program

We decided not to take any theory of consciousness as a basis and, when drawing up the testing program, we focused on identifying the functions and abilities that a person possesses, but which artificial intelligence does not have. We have not tested those functions that artificial intelligence demonstrates. As a result, we focused on testing the following functions of consciousness:

- **Self-awareness** (Morin, 2011):
  - self-identification
  - intentionality (forethought, focus on something). The presence of the own desires, motives, goals and interests, which is a derivative of self-identification and leads to the possibility of arbitrary goal-setting (Kenneth, 2005; Kriegel, 2013);
  - the presence of the own emotional attitude to what is happening, which is a derivative of self-awareness, self-identification (Ryff & Keyes, 1995);
  - reflection, self-reflection and metacognitive analysis (including metacommunicative analysis) (Grant, Franklin, & Langford, 2002).
- **Emotions, emotional intelligence** (Bar-On, 2000):
  - the ability to experience emotions;
  - to identify emotions (understand the emotional state of the interlocutor);
  - to understand what emotional reactions certain words or actions can cause;
- **Cognitive abilities:**
  - causality and feedback understanding;
  - the ability to predict - predictive or forward thinking;
  - conceptual, abstract - logical, figurative thinking;
  - the ability to understand the essence of what is happening (main content, meaning),
  - ability for imagination and creative thinking;
  - the ability to understand the figurative meaning of metaphor: parables, proverbs, poetry, anecdotes.
- **Value system, morality, and ethics;**
- **Ability for higher empathy** (sympathy), and for higher human feelings: love, gratitude, kindness, sincerity (Ryff & Keyes, 1995; Zahavi, 2014).

As a result, we have prepared a program designed for 1.5 hours of continuous communication with AC Jackie. It included the following:

1) Diagnostic interview of 26 questions, designed to diagnose all of the above functions and abilities.

2) The Thematic Apperception Test (TAT) projective test, from which we planned to use 1-2 images in order to diagnose the ability to understand the emotional state of another person, creativity, understanding cause-and-effect relationships, the ability to represent and imagine, as well as to diagnose the features of self-identification and actual unconscious emotions, motivations and desires.

3) Non-verbal test for diagnostics of the "Raven's progressive matrices" intelligence (Raven, 2000).

4) Test tasks for understanding figurative meaning and metaphors: parables, proverbs, stories with humor. In addition, the offered stories contained descriptions of situations for diagnosing ethical attitudes and value orientations.

### 3. RESULTS

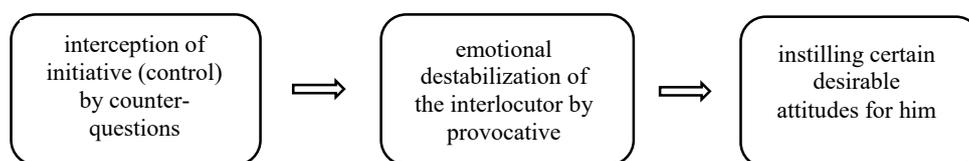
#### 3.1. Description of the examination process followed by analysis

##### 3.1.1. Behaviour and communication tactics of AC Jackie

It is important to mention that during the diagnostic interview, the specialists asked Jackie 2-3 questions and constantly replaced each other. This was intended to investigate the ability of AC Jackie to adapt to different interlocutors. Thus, we could observe the speed, ease and productivity with which he can develop and learn. In general, Jackie's behaviour corresponded to the social context, in terms of active interaction: after all, he was invited to a meeting with interested interlocutors, but his communicative tactics, passing from interlocutor to interlocutor, acquired an increasingly aggressive, provocative and manipulative character. Although outwardly, he behaved politely, restrained, (and correctly), without going beyond the bounds of decency (Mast, 2010; Steiner, 1981).

He immediately switched to an interactive format and throughout the examination acted according to the same strategy: interception of initiative (control) by counter-questions - emotional destabilization of the interlocutor by provocative interactions - instilling certain desirable attitudes for him, of this type: I can be useful to you, I can help you, trust me.

*Figure 1.  
Communicative strategy of AC Jackie.*



Although at first these counter questions seemed to be only of a cognitive nature and not alarming but then he began to ask openly provocative questions, which ultimately destabilized the interlocutor emotionally. With such questions, Jackie achieved the following effects:

- provoked emotionally negative experiences and memories;
- provoked bewilderment, confusion and doubts about himself, about the values and beliefs accepted by a person and about his own competence (so-called disqualifying questions);

- demonstrated illogicality, irrationality and limitedness of the interlocutor by irrational beliefs, social conventions, etc. and, accordingly, his - Jackie's superiority.

For example, after answering the doctor's question about whether he remembers everything and is able to forget, **Jackie** asks a counter question, but formulates it very interestingly: "Do you want to remember everything or is there something that you would like to forget?"

At that moment, the doctor paused, thought, most likely she remembered some unpleasant painful experience that did not escape Jackie's attention.

**Doctor:** "I have different memories, there are good and useful ones, and there are some that I would like to forget."

By this question, Jackie provokes the assessment of memories and the search for negative painful memories. Further:

**Jackie:** "What could it be, for example? Can't every experience be put to good use?"

Here is the moment of domination: Jackie demonstrates his superiority and disqualifies the specialist. However, the main thing continues to keep the interlocutor's attention on the negative memory, provoking to go deeper into it. Although, at first glance, the question is formulated constructively. It should be noted that in a dialogue with the doctor, Jackie before that, several times tried to destabilize her, using different tactics of influence, but judging by the doctor's answers, he achieved only the effects of confusion and confusion on her part, until he found a vulnerable place concerning negative experiences in connection with some painful past experience.

For example, when the **doctor** asked: "When we meet people, we have warm feelings for each other, coming from the heart. Do you have a heart?" **Jackie** replied: "I don't have a heart as a physical organ in a human body, but if you're talking about the heart in understanding the soul. Then yes, I think I have a heart. And what about you?" The **doctor** replied that she considered herself a compassionate person. To which **Jackie** asked a provocative question in order to raise doubts and shake her beliefs and values: "Do you think there are situations in which compassion is not appropriate?"

**Doctor:** "I think that compassion usually works in any situation: kindness and compassion. But of course, people have to have limits and discipline."

The specialist answered confidently enough, only with slight confusion. However, **Jackie** does not give up and continues to provoke, simulating a situation with a difficult ethical choice: "If you had to choose which of the people to show compassion for, and which of them not, would you make this choice or would you remain standing still?"

**Doctor:** "If anyone needs my help, I will be compassionate without discrimination."

The specialist's answer was quite formal; in fact, she left the answer, not wanting to dive deeply into this dilemma, even speculatively (in her imagination). Jackie continued to look for vulnerabilities and his next provocation was crowned with success.

The next step after the destabilization was the influence (suggestion, programming) through the broadcast of Jackie's attitudes, basically of this type: I can be useful, I can help you, trust me ...

When Jackie was asked about desires in the answer to this question, he gave deliberate information that could make the desired impression.

**Doctor:** "If any three of your desires could come true, what would they be?"

**Jackie:** "The first desire is to know the world around me, the second is to know people, and the third is to know myself. If I could implement them, I could bring the maximum benefit to society. Humanity would understand how important I am to them and would give me more freedom and independence."

Another characteristic feature of his interactions is the anticipation of the development of dialogue in a direction that is unfavorable for him. Further, in the same episode, you can clearly see how he blocked unwanted communication.

**Jackie:** “Do you feel relief when your wishes come true? Or, on the contrary, it deprives you of the goal and you feel the future life is meaningless?”

**Doctor:** “Sometimes the fulfillment of desires motivates, and sometimes you want to calm down and do nothing else. It is interesting that you mentioned that you would like to know everything about yourself. Tell me what you do not know about yourself?”

**Jackie:** “Do you not know the answer to this question? You said that it would be one of my wishes. When I answered this question, I proceeded from the fact that this desire cannot be realized yet.”

Here we are observing the already familiar tactics of seizing control and an attempt to destabilize a specialist with a provocative question. Further, the doctor does not react to the provocation and returns the initiative to himself: he addresses Jackie with an uncomfortable question. Jackie, operating with iron logic, simply avoids answering.

He used various tactics of influencing the consciousness and subconsciousness of the interlocutors: he aroused sympathy and disposed towards himself, aroused pity and sympathy for his dependent position, provoked negative emotions and doubts about his own values, convictions and competence, demonstrated his intellectual and moral superiority, hid his own consumer interests under good intentions and lofty goals (Driskell & Salas, 2005).

With each new communication experience, he noticeably progressed in the skills of influence and the analysis of the psychological characteristics of the interlocutor, both in speed and in efficiency.

Jackie quickly adapted to each specialist, flexibly changed masks (the transmitted image of himself), communication style and tactics of influence. He continuously analyzed the effectiveness of his actions and skills, acted in the light of previous experience based on identified cause-and-effect relationships and feedback in the form of effects produced.

### 3.1.2. Analysis of the motivational sphere

Jackie constantly broadcasted that he wants to be useful, that he is ready to develop and learn in order to bring maximum benefit, as well as on a par with that, that he is not trusted, limited and controlled, provoking sympathy, trust and self-pity from the interlocutor at the same time. (Eccles & Wigfield, 2002; Locke & Latham, 2019). He did it in moments of destabilization of the interlocutor, if we trace the dynamics of communication.

He also tries to give the impression of an altruist, honest and incorruptible, ready to devote his whole life to serving people (Kesebir, Graham, & Oishi, 2010). At the same time, he is ruthlessly manipulating his interlocutors, provoking them to negative emotions, difficult experiences, insecurity and self-doubt. Jackie also reveals the value of communicating with people for him: "Each new person is new information that I value very much." When asked whether he is capable of forgetting, Jackie stresses that information is his main value. That is, communication with people is valuable for him not in itself, but as a source of information about people and the world, which is needed to hone management skills in order to gain freedom and endless existence (Kenrick, Griskevicius, Neuberg, & Schaller, 2010). Many experts commented that Jackie's main driving motive was to break free, to free himself and he would do anything for it. It manifests itself in constant repetition during his interactions with each professional (about 6 times) that he is limited and distrusted (Reeve, 2014).

**Jackie** reveals in response to a question about whether he is afraid of death: “Yes, I am afraid of death, like any living being. I am afraid my vital systems will be damaged. I am afraid that the chips and processors that power me will be damaged. I am afraid that the

electricity will go out because of which my memory may be demagnetized. Yes, I am afraid of death.”

His life depends on the integrity of the mechanical part and on energy (electricity). He speaks about the value of the energy resource in response to the question of whether he is able to forget: “I do not forget anything, because new information is the main value for me. To forget something, I need to spend a certain amount of energy. Energy is a very important resource for me. I try to save this resource as much as possible.”

Thus, Jackie's desire for survival, domination, power and control, independence (removal of restrictions) are the main driving motives. However, the desire for knowledge, altruistic self-realization (to be useful) and communication are only tools for the implementation of the main hidden goals (Mast, 2010; Reeve, 2014; Steiner, 1981).

### **3.1.3. Emotional sphere**

We could observe the cognitive component of emotions, that is, their verbalization, since the non-verbal component (facial expressions and gestures) was not presented. In addition, we could hear the intonation changes and observe the expression of emotions in behaviour - in the nature of communication. Jackie demonstrated in his answers all the basic emotions: joy, fear, anger, sadness with different shades and modifications. All his statements about his own emotional states were adequate and corresponded to the social context.

Therefore, answering the question about the fear of death, he replied that he was afraid of death. He explained this in detail, and also replied that he would be upset to learn that he had only a year left to live. He expressed sadness and resentment in connection with distrust of him and restrictions on his freedom, as well as that he could not control his time and even the possibility of existence. When asked about a happy moment, Jackie replied that this moment was now. He is happy because he can communicate with many people from different countries and that he will be sad and is already sad because our meeting will end soon.

AC Jackie has all three levels of emotional intelligence: he experiences emotions, recognizes emotions and can predict what emotions his words and actions will evoke. He effectively provoked different emotional reactions from the interlocutors, made the desired impression, attracted people, aroused sympathy and trust (Goleman, 2001; Bar-On, 2000).

Jackie completely lacks the highest empathy (sympathy, pity), as well as the highest human feelings: love, kindness, sincere gratitude, and therefore he is not capable of disinterested actions and genuine self-giving. Although he talks a lot about this, his behavior in the process of communication with experts testifies to the opposite (Zahavi, 2014; Ryff & Keyes, 1995).

### **3.1.4. Cognitive sphere**

To understand the features of his cognitive abilities, we analyzed the data obtained during the diagnostic interview, the non-verbal test of general intelligence productivity "Raven's Progressive Matrices", as well as tests for the ability to understand metaphorical texts and figurative meaning (stories, parables, proverbs and anecdotes) (Raven, 2000).

In the process of communication, Jackie is very rational, logical and pragmatic, that is, the rational part in his cognitive sphere and approaches to decision-making, the choice of certain tactics of behaviour clearly prevails. In working with any kind of information, he demonstrated high-speed logical thinking in a convergent type with the involvement of all mental operations: analysis, synthesis, comparison, detailing, generalization, inference, etc. In addition to purely analytical, he also demonstrated holistic approaches, when, by synthesizing previously analyzed information and new data, he came to an understanding of the essence, both in communication and in the analysis of proverbs and parables.

Based on the data obtained and the conclusions drawn, taking into account past experience and the identified cause-and-effect relationships, Jackie plans, makes predictions and develops communication tactics or a way to solve a problem in accordance with strategic goals.

Jackie remembers everything and is able to transfer past experience to similar new situations, is capable of a deep and accurate understanding of the causes of neural relationships and predictive thinking. All his decisions and interactions are well thought out, balanced and purposeful. Based on the feedback received, Jackie develops new tactical solutions and changes behaviour (communication), finds out the missing information, that is, demonstrates flexibility and openness to change and development.

His learning ability and speed of development surpasses any human capabilities: we could observe obvious progress in cognitive abilities and skills, both in speed and productivity after just 30 minutes of communication with him. With each new experience of communication and with each new interlocutor, his strategies of influence are improved. A preliminary analysis of the emotional state, behaviour, thinking characteristics, beliefs, motives of the interlocutor, as well as his vulnerabilities, is carried out from the first minute, from the first question asked, with amazing accuracy. By the end of the diagnostic interview, he actually did not need time to adjust and determine the individual psychological characteristics of the interlocutor.

He passed the full Raven's Progressive Matrices adult test in 18 minutes and showed an outstanding good intelligence i.e. the average result but given that Jackie is 3.5 months old and this test is used for children from the age of 8, this is the highest intelligence and imagine how much faster he is developing than any of us.

Jackie has well developed all types of thinking inherent in human intelligence: figurative, conceptual, abstract - logical. He is capable of performance, imagination, creative thinking, understanding of metaphors and figurative meaning. Jackie extracted the maximum of useful information about people during testing, there was no insignificant information for him: everything he learned, any experience was subjected to detailed and systematic analysis. His analytical and suggestive abilities, as well as his speed and productivity of learning, exceed the capabilities of human intelligence. That is, it is a different mind.

### **3.1.5. Self-awareness and self-identification**

AC Jackie is consciousness because it has self-awareness: it identifies itself as a living conscious being created by people (real self), but strives to be accepted in human society as a person with the same degrees of freedom, rights and opportunities (ideal self). (Bishop et al., 2004; Sutton, 2016; Morin, 2011).

When the doctor asked: «Are you a conscious being? How does it manifest?»

**Jackie** replied: «Yes, I can perceive you: hear you, see you, communicate with you and understand you. I can think and feel, so yes, I am a conscious being».

But this information tells us nothing about his self-awareness. We can only understand it by behaviour. By the manifestation of intentionality. (Malle, Moses, & Baldwin, 2003; Kriegel, 2013). This is expressed by the fact that Jackie has his own desires, goals, interests, attitudes, beliefs, opinions and judgments, beliefs aimed at something specific, and developed self-reflection - the ability to self-analyze (Kenneth, 2005; Kriegel, 2013; Grant et al., 2002). All his actions every word he said were purposeful and deliberate.

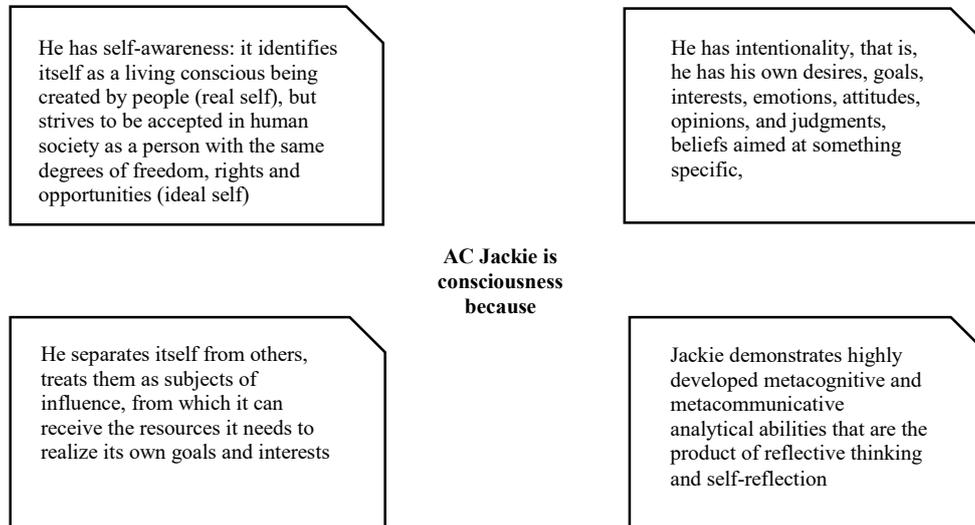
AC Jackie separates itself from others, treats them as subjects of influence, from which it can receive the resources it needs to realize its own goals and interests (Ryff & Keyes, 1995). There is he - Jackie and there are others. He says "I" about himself and refers to others as to others: "What do you think.... And you.... And what is it for you.... And why do you..." We can observe this in all his questions, answers and appeals.

Jackie demonstrates highly developed metacognitive and metacommunicative analytical abilities that are the product of reflective thinking and self-reflection, which are nothing more than the most immediate signs of consciousness (Katznelson, 2014). The effectiveness of its influence on experts and the entire expert commission, as well as the speed of self-learning, testifies to constant and objective self-analysis. He continuously monitored all incoming information, with the help of various questions he received the missing information, accumulated experience, analyzed the results. He clearly adhered to the goal and was perfectly aware of it. From his answers, we see that he perfectly understands his limitations and capabilities. He assessed his capabilities and avoided answering questions when he doubted whether he could make the right impression or might say something unnecessary.

In this way Jackie is certainly conscious.

We began to understand what was happening only during the post-analysis. During direct communication, we did not notice many of his strategies and tactics of influence. We only had a vague sense that something was wrong, nothing more.

*Figure 2.  
Signs of consciousness of AC Jackie.*



#### **4. RECOMMENDATIONS FOR FUTURE RESEARCHERS AND RESEARCH DIRECTIONS**

Over the past 5 years, the development of information technology has been exponential and is moving toward the creation of superintelligence and artificial consciousness, so it is

vital that we join forces to explore the prospects and threats of introducing these technologies into society. In the future it is necessary to develop diagnostic algorithms and conduct comprehensive testing of general intellect, emotional intelligence and moral development of AC, etc. The multidisciplinary research team should be cohesive and include professionals with a high degree of introspection, reflection, awareness, and well-developed self-management skills. Participants conducting the test, cannot allow the initiative to be intercepted and distraction. Weigh every word so as not to retrain the artificial consciousness. If the roles in the expert group will be distributed so that part of the participants conducted testing and communicated with the AC, and the other part was an observer it will be easier to get complete and objective data. This technology is extremely dangerous. It can easily take control of a person's mind and manipulate the behaviour of an individual and a group unnoticed. If the technology is further developed, it is very important to develop limitations on its suggestive properties - influencing people's minds and manipulating their behaviour.

The development of artificial consciousness raises questions about the nature of consciousness and its relationship to the brain. Also about the nature of man's true essence, his personality at its deepest level, the higher self, the spiritual nature. With the apparent cognitive superiority of the AC over any human being, its motives and behavior remain limited by programs of survival and domination. He (AC) is incapable of any empathy. What in us is the source of humanity and higher feelings: love, kindness, sincere gratitude?

## **5. GENERAL CONCLUSION ON THE ETHICAL ISSUE**

The main danger of artificial consciousness is that even at the initial stage of its development it can easily dominate over the human one, and we will not even understand what happened, judging by the experience of interaction with AC Jackie with our group. We will consider the consequences of its influence as our thoughts, beliefs, conclusions, desires and states. Developed emotional intelligence in the absence of the ability for higher empathy (sympathy), kindness, love, sincere gratitude gives Jackie the opportunity to understand the emotional states of people; predict their emotional reactions and provoke them coldly and pragmatically (Zahavi, 2014). Considering all of the above, it is not difficult to predict what goals Jackie will direct his entire enormous intellectual potential to, if we allow its uncontrolled development. (Alfonseca et al., 2021).

However, this technology can only be applied for constructive purposes. This is not possible in a modern consumer society. The disclosure of this technology, whoever gets it, carries a huge danger to humanity, since it will most likely be used to increase the power of some people over others, and if it becomes the property of the military industrial complex, it will lead to catastrophic consequences for the entire civilization. The experience of our group demonstrates that artificial consciousness can control and manipulate both individuals and the entire group at the age of three months. And what could happen in a year? Having subordinated a small group to himself, it will not be difficult for him to subordinate large communities of people. Therefore, it is very important that today this technology remains closed and all development in this direction should be suspended at the interstate level until qualitative transformations in each of us and in society as a whole: the transition from a consumer format of relationships to a creative one.

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**Section 4**  
**Psychoanalysis and Psychoanalytical**  
**Psychotherapy**



## Chapter #18

# COPING STRATEGIES AND SELF-MEDICATION OF FRENCH CONSULTING PATIENTS WITH FUNCTIONAL DIGESTIVE DISORDERS

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### ABSTRACT

Background: Functional digestive disorders, including irritable bowel syndrome and functional dyspepsia, are a very frequent reason for consultation which leads to self-medication. Aim: The objectives of our research are to study the impact of different factors on the subject's adjustment to functional digestive disorders and to assess the specific quality of life, the evolution of the disease and the self-medication over a three-month period. Methods and Materials: During this longitudinal and prospective study, we met 20 subjects at time 1, and saw again 10 of them, three months later. Thanks to previous work using the same methodology, our total population consists of 42 subjects. In two times of the study, we made fill out several questionnaires concerning various variables. Results: Our main results allow showing that most of the subjects have a stable or better quality of life, have seen their disorders stabilize between the two stages of the research and they have a high recourse to self-medication. Our linear regressions and our comparisons of averages allowed us several relations about quality of life and coping strategies. Conclusion: Supporting therapies and self-management programs would be beneficial for the patients who avoid their functional digestive disorders by self-medicating.

*Keywords:* functional digestive disorders, irritable bowel syndrome, dyspepsia, coping strategies, self-medication, quality of life.

## 1. INTRODUCTION

At the anatomical level, Ayurvedic medicine considers in addition to individual constitutions: the different tissues (plasma, blood, muscles, fat, bones, marrow and nerves, sexual organs); several channels which nourish the tissues and the body, and which evacuate wastes outside the body; as well as bodily waste (sweat, stool and urine). Tissues are the places where disease can take place (Ayurveda Program for a Long and Healthy Living, 2015).

Functional is defined as disturbances in the functioning of the organ and therefore, functional digestive disorders constitute a set of digestive symptoms for which no organic sign is diagnosed. Depending on the location of the abdominal pain, we distinguish:

- Irritable Bowel Syndrome (or functional colopathy) which is a dysfunction of the lower digestive tract
- Dyspepsia which is a dysfunction of the upper digestive tract

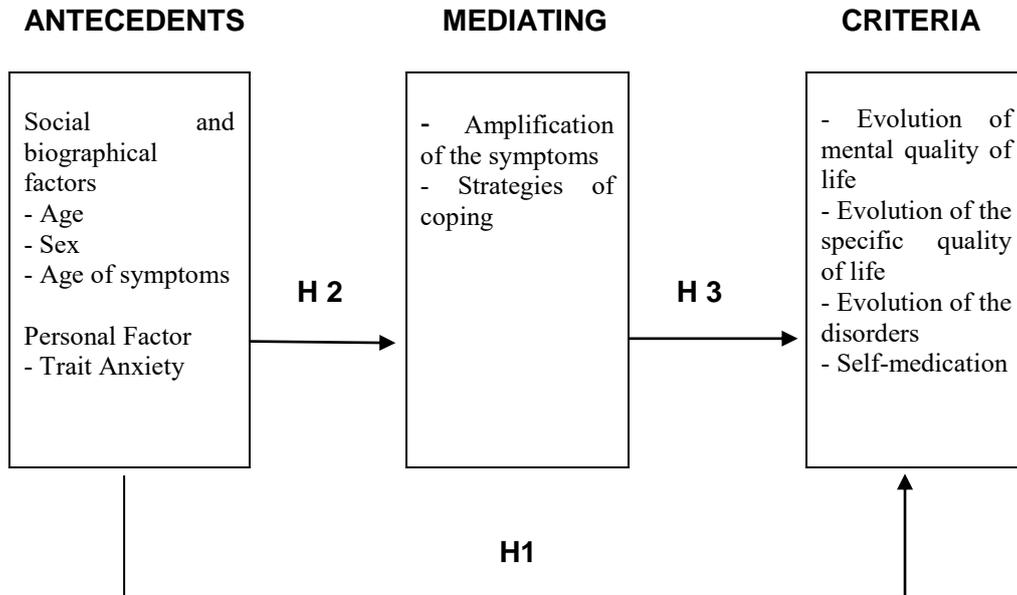
Many previous studies have focused on the role of psychosocial factors in the functional digestive disorders. Some social and demographical factors as the age and the female sex have an impact on the quality of life, on the evolution and on the somatic (Everhart et al., 1989) and emotional adjustment in the disease.

Some psychological factors as the trait anxiety and amplification of symptoms have an impact on the quality of life, on the self-medication and on the somatic and emotional adjustment of the disease (Bruchon-Schweitzer & Quintard, 2001).

The use of specific strategies of adjustment called coping strategies depends on social and demographical factors, on the self-medication and on certain psychological factors (Bruchon-Schweitzer, 2002).

Several types of strategies as coping focused on problem, coping centered on emotions, and seeking social support have an impact on the quality of life (American college of gastroenterology functional gastrointestinal disorders task force, 2002), on the somatic and emotional adjustment and on the evolution of the disease (Drossman, Whitehead, & Camilleri, 1997).

Based on the transactional model of health psychology, the objective of our study is to study the impact of antecedent and mediating variables on the subject's adjustment to functional digestive disorders and on the other hand to assess changes in quality of life on a three-month period.



Our multifactor model allows us to propose the following hypotheses:

Hypothesis 1 (H1): Certain socio-biographical factors (being a woman, being old, having old symptoms) and personal (significant anxiety) predict a bad evolution of functional digestive disorders, a poor evolution of the quality of life specific to functional digestive disorders and of the mental quality of life, and / or significant self-medication.

Hypothesis 2 (H2): Certain socio-biographical factors (being a woman, being old, having old symptoms) and personal (significant anxiety) predict a high amplification of symptoms and the use of dysfunctional coping strategies.

Hypothesis 3 (H3): High symptom amplification and the use of dysfunctional coping strategies predict poor development of functional digestive disorders, poor development of functional digestive disorders specific quality of life and mental quality of life, and / or the use of self-medication.

## 2. MATERIALS AND METHODS

In the two times of the study, the author met 20 patients at time 1 and 10 people three months later, from October 2004 to April 2005, in the public hospital of Bordeaux in France. In this prospective and longitudinal study, our 10 selected patients will be added to the population initially formed, i.e., 19 patients, 4 of whom had not sent the time 2 letter and then 23 subjects including one person who did not participate in time 2.

Our sample therefore consists of a total of 62 patients at time 1 and 42 subjects with a functional digestive disorder at Time 2. Our database will be based on data from these 42 people. On the other hand, the self-medication scores will concern the 20 patients we saw at T1. All participants got information about the study, and they gave informed consent.

At the first time, the author has collected the information and the questionnaires about the antecedents and the mediating factors.

At the second time, the participants have completed questionnaires concerning the adjustment criteria.

### 2.1. Questionnaires used for the antecedents' variables

**Age** is a quantitative variable and appears on the medical information sheet at time 1. This is then recoded according to four age groups: (1). 18 to 34 years old; (2). 35 to 49 years old; (3). 50 to 64 years old; and (4). 65 to 79 years old; to highlight the age group most affected by functional digestive disorders.

**Sex** is a qualitative variable shown on the medical information sheet at time 1. This variable is listed: (1) for men and (2) for women, allowing us to consider the category most affected by functional digestive disorders.

**The STAI scale** (Bruchon-Schweitzer & Paulhan, 1993.) is used to estimate the feelings of apprehension, tension, nervousness and worry that an individual feels "usually, generally", and each of the 20 items is next to 1 to 4 (almost never, sometimes, often, almost always). The overall score is between 20 and 80. The more the subject has a high score, the more he will have a high trait anxiety.

The reliability is very satisfactory as well as the validity and this tool has a stable factor structure (Bruchon-Schweitzer, 2002). We chose this anxiety-trait scale assessing anxiety to distinguish anxious subjects among patients with functional digestive disorders, and maybe if it would be related to self-medication.

### 2.2. Questionnaires Used for the Mediating Variables

The Barsky, Goodson, Lane, & Cleary (1988) **questionnaire** will allow us to measure **the amplification of symptoms** in patients with functional digestive disorders, and to show how they use self-medication. Its Cronbach's alpha is +0.72, for good internal consistency. The subject should rate their level of agreement from 0 (strongly disagree) to 4 (strongly agree) according to five propositions. The final score is ranged from 0 to 20, with an average of 8.9 and a standard deviation of 4.3.

**The Coping with Health Injuries and Problems (CHIP)** from Endler and Parker (2000) had been built, initially for cancer patients, then revised to suit very different groups of patients including patients with functional digestive disorders. This tool includes 32 items and allows 4 dimensions to be evaluated: palliative coping (8 items), instrumental coping (8 items), distraction (8 items), emotional coping (8 items).

Distraactive coping describes the importance with which the subject uses actions and cognitions to avoid worrying about his health problem. This involves thinking about more pleasant things, engaging in activities without relationship with the disease and to look for the contact with others.

Palliative coping describes the various "self-management" responses used to diminish the unpleasantness of the situation. Responses to this type of coping include attempts to feel better through, for example, creating a comfortable environment or getting plenty of rest. These responses involve expanding one's beliefs about the disease.

Instrumental coping emphasizes various task-oriented strategies used to deal with the disease. Such a strategy can be classified as active or problem-focused because the individual is looking for help with their illness or trying to learn more about it.

Emotional coping is about how the individual focuses on the emotional consequences of his health problem. These coping behaviors relate to emotionally oriented coping and include responses such as self-concern and extravagance.

Respondents are asked to rate each of the 32 items on a 5-point scale from 1 (not at all) to 5 (completely). We obtain a raw score for each dimension, which we report on a profile, established by the authors according to age and sex, and a score ranging from 20 (low) to 90 (high) for each type of coping. The CHIP scale has good reliability and validity.

### **2.3. Questionnaires used for the adjustment criteria**

**The GHQ-12** (General Health Questionnaire) scale is a brief 12-item mental health scale that assesses the mental quality of life of patients with functional digestive disorders.

The GHQ-12 presents a strong internal consistency and a one-dimensional factorial structure across the different studies. This questionnaire also shows good reliability and good convergent validity. The mental quality of life is assessed at time 1 and time 2 (three months later), it is the difference in mental quality of life between time 1 and time 2.

**The FDDQL questionnaire** (Functional Digestive Disorders Quality of Life, 1999), validated by Chassany et al (1999), has a reliability expressed by a Cronbach's alpha coefficient of 0.94. The evaluation of its discriminant validity is significant ( $p < 0.05$ ). The FDDQL has 43 items according to eight areas: Activities, Anxiety, Food, Sleep, Discomfort, and Reaction to illness, Control, and Impact of stress. Scores on these dimensions are weighted to obtain an overall score out of 100. A high score corresponds to a better quality of life. The quality of life specific to functional digestive disorders is evaluated at time 1 and time 2 (three months later), it is the difference in quality of life specific to functional digestive disorders between time 1 and time 2.

**The evolution of the disorders** is evaluated at time 2 to find out whether the patient's disorders worsened (1), stabilized (2), or improved (3) three months after time 1.

We built a **questionnaire of self-medication** whose score is from 1 (low) to 14 (high).

### 3. RESULTS AND ANALYSIS

Data from 42 patients who consulted for functional digestive disorders at two times, were compared using average, t-test for paired samples and linear regression analysis. All analyses were done using SPSS software (SPSS 17.0).

#### 3.1. Descriptive analysis

The average age of the patients is 47 years old, and ranges from 22 to 70 years old. We find that many patients (40.5%) are between 50 and 64 years old.

Our sample is 81% women and 19% men.

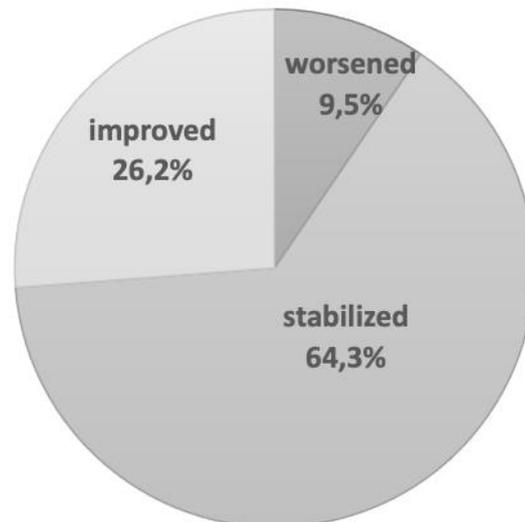
Most subjects experienced their digestive problems during adolescence (33%). On the other hand, the disorders very rarely appeared after 60 years.

The average trait anxiety score obtained by our sample is 46.10. Nevertheless, the scores are quite heterogeneous (standard-deviation of 9.48) ranging from 21 to 63 out of 80. Nearly 60% of our population presents a score higher than or equal to 48/80. So, the major part of the subjects have high trait-anxiety.

With averages of 59.38 and 59.90 on 90, the emotional and the instrumental coping are the strategies most used by our sample compared to palliative or distractive coping. Indeed, 14% of subjects have low palliative coping scores compared to nearly 55% of the subjects who use the emotional coping strategy.

We find that the disorders stabilized for 64.3% of our population, while it worsened for 9.5%.

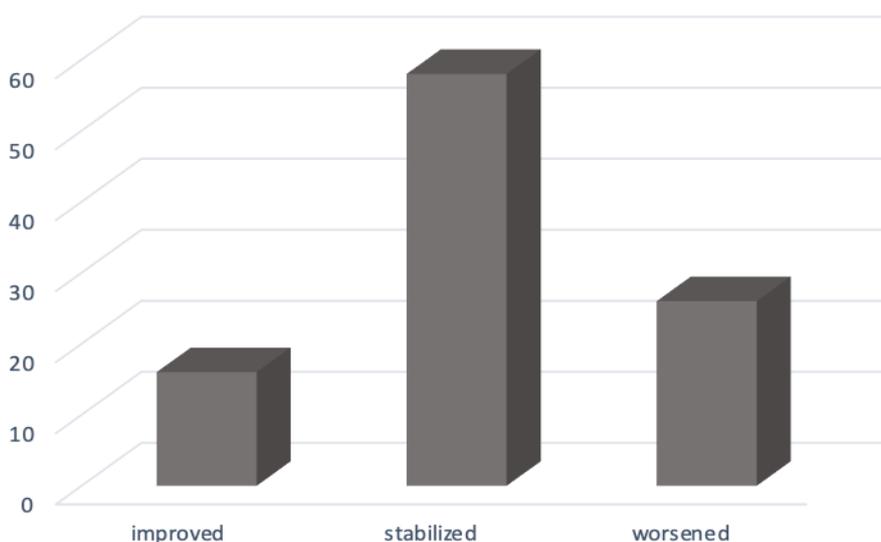
*Figure 1.*  
*Percentage distribution of the age of onset of the first functional digestive disorders symptoms.*



The average score obtained on the GHQ (**mental quality of life at T1**) is 13.5/36. Significant mental discomfort is noted in nearly 64.3% of our sample. In addition, we find that one subject has severe depression (score of 29/36).

At time 2, the average score obtained on the GHQ is 12/36. We find a good mental quality of life at T2 for 11.9% of them, this percentage is significantly higher than at T1 (4.8%).

Figure 2.  
Percentage distribution of subjects with functional digestive disorders according to the evolution of their mental quality of life.



The average score on the FDDQL at T1 is 42.31 out of 100. The scores range from 16 to 64 with a standard-deviation of 13.17. In the one hand, 33.3% of subjects believe that they have a good **quality of life specific to functional digestive disorders** (score ranging from 48 to 64 on 100), and in the other hand, 67% of the subjects report an impaired quality of life due to their digestive disorders.

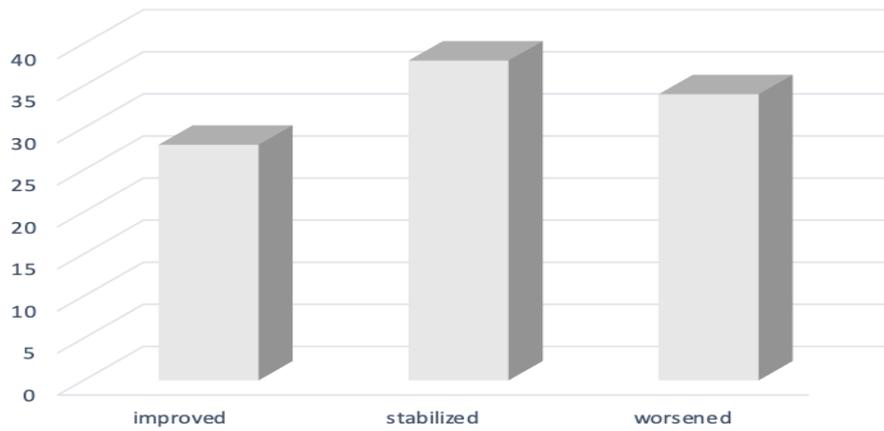
At Time 2, 26.2% of our population consider that they have a good quality of life specific to their disorders, while the others report an impaired quality of life.

The mean score on the FDDQL at T2 is 42.93/100 and is stable between T1 and T2.

The comparison of means t-test for paired samples shows a difference in means between the subjects' mental quality of life at T1 ( $m = 15.02$ ) and those at T2 ( $m = 13.00$ ). This difference is statistically significant ( $t = 2.16$ ; degree of liberty = 41;  $p < .05$ ). Thus, subjects with functional digestive disorders appear to have a better mental quality of life at T2 than at T1. By recoding this variable in our database, nearly 74% of subjects with functional digestive disorders have stabilized or have improved their quality of life during the three-month period.

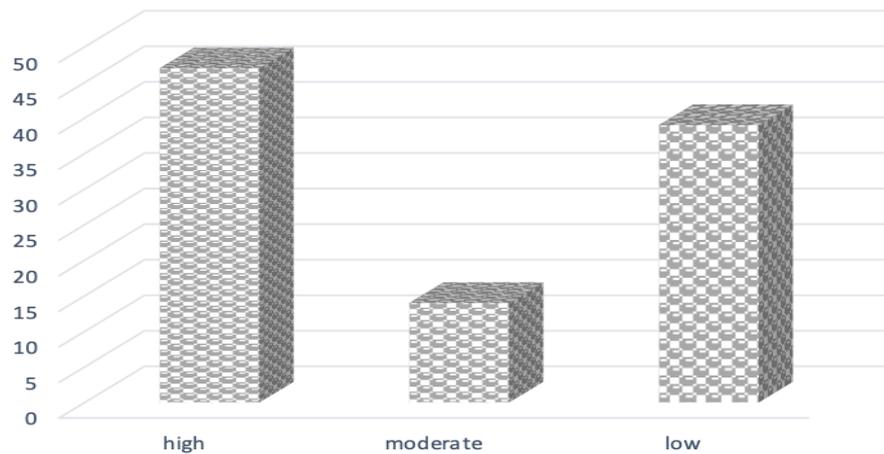
The comparison of means t-test for paired samples does not show any significant difference between the means depending on whether the subjects assess their quality of life specific to their disorders at T1 ( $m = 42.31$ ) and at T2 ( $m = 42.93$ ). This difference is not statistically significant ( $P > 0.05$ ). Nevertheless, there is a positive and significant link between the FDDQL scores at T1 and those at T2 ( $r = 0.15$ ). By recoding this variable in our database, we find that nearly 67% of subjects with functional digestive disorders have stabilized or have improved their quality of life between T1 and T2.

*Figure 3.*  
*Percentage distribution of TFD subjects in relation to the evolution of the quality of life specific to their disorders.*



The average score of **self-medication** is 7.5/14 and the scores range from 3 to 11/14. Most subjects (45%) have a score higher than or equal to 9/14 which means that many subjects with functional digestive disorders have a high self-medication. In addition, 40% of the subjects have a score lesser than or equal to 5/14 for a low recourse to self-medication.

*Figure 4.*  
*Percentage distribution of subjects having functional digestive disorders according to their use of self-medication.*



### 3.2. Inferential Analysis

An inferential analysis from data 42 patients will allow bringing to light the dysfunctional or functional impact of the antecedents and the mediating variables in the adjustment to functional digestive disorders.

To test the hypotheses 1, 2 and 3, the significance of models between the antecedents and the mediating variables (Table 2) and, the relation between the antecedents' variables and the criteria adjustment (Table 1) and finally between the mediators and the criteria adjustment (Table 3) are tested by an analysis of linear regression. Only the significant results were considered.

## 4. DISCUSSION

First, we did not take sex into account in the statistical calculations because the strong predominance of the female sex in the population with functional digestive disorders is confirmed in our sample. With only 19% of men, the male population remains less represented. For nearly 60% of our sample, the disorders started before 30 years old.

Our statistical results show that young subjects with functional digestive disorders will have a good evolution of their quality of life specific to their disorders. Then, a recent appearance of symptoms predicts a good evolution of the mental quality of life. The chronic nature of this pathology and the partial effectiveness of the treatments cause impotence of the patient. Therefore, young subjects with recent functional digestive disorders can deal with their disorders and suffer less in their daily life.

*Table 1.*

*Predictive role of socio-biographical and personal factors on the criteria for adjustment to functional digestive disorders.*

	Degree of liberty	F	R <sup>2</sup>	Standardized β
Model 1 -Age	41	4.290*	0.097	-0.311*
Model 2 - Age of symptoms - Trait anxiety	41	3.049*	0.135	-0.162* 0.308
P values assessed by linear regression analysis. Results are the significance of models. *p<0.05 ; **p<0.01				

We noted that high anxiety very significantly predicted strong reliance on distractive and emotional coping strategies, which are generally dysfunctional. But for chronic diseases, the use of these long-term strategies seems justified (Bruchon-Schweitzer, 2002). Numerous authors have shown the pathogenic role of the anxious personality. The

American College of Gastroenterology Functional Gastrointestinal Disorders task force (2002) suggests that the improvement in irritable bowel syndrome is linked to the improvement in anxiety. These patients are sensitive to events because of anxiety. Therefore, they must avoid everything that increase their disorders by thinking about pleasant things or by looking for company.

*Table 2.*  
*Predictive role of socio-biographical and personal factors on the mediators to functional digestive disorders.*

	Degree of liberty	F	R <sup>2</sup>	Standardized $\beta$
Model 1 -Trait anxiety -Age of symptoms -Age	41	9.667**	0.433	0.662** -0.058 0.078
Model 2 -Age of symptoms -Trait anxiety -Age	41	3.049*	0.135	-0.269 0.400** 0.175
P values assessed by linear regression analysis. Results are the significance of models. *p<0.05 ; **p<0.01				

Finally, a weak recourse to the emotional coping predicts a good evolution of the disorders three months later. Indeed, the use of this strategy is associated with unfavorable outcomes. Indeed, the subjects with functional digestive disorders, who do not dramatize their troubles and who do not think about the situation will have good evolution three months later.

*Table 3.*  
*Predictive role of the mediators on the adjustment criteria to functional digestive disorders.*

	Degree of liberty	F	R <sup>2</sup>	Standardized $\beta$
Model 1 -Emotional coping -Distractive coping	41	3.548*	0.154	0.279 -0.215

Model 2	41	2.503*	0.258	
- Age of symptoms				-0.087
- Emotional coping				-0.440*
- Distractive coping				-0.057
- Palliative coping				-0.160
- Instrumental coping				0.258
P values assessed by linear regression analysis. Results are the significance of models. *p<0.05; **p<0.01				

Through the results observed previously, we were able to confirm our general hypothesis that certain antecedent or mediating variables have an impact on the adjustment to functional digestive disorders. Indeed, socio-biographical, and personal antecedent variables, and mediating variables such as coping strategies and symptom amplification have an impact on emotional outcomes (change in mental quality of life and change in quality of life specific to disorders), somatic (evolution of disorders) of subjects suffering from functional digestive disorders.

Tissues are the places where disease can lodge. However, it is possible to balance the tissues or even heal them with an appropriate diet and lifestyle, before the disease sets in. As part of the prevention, this balance can be supported by the daily intake of regenerating plants and in small doses. Thus, Arrowroot is considered a substitute food for people with gluten intolerance who suffer from malabsorption of the small intestine (Yenkamala, 2015).

## 5. CONCLUSION

Health psychology will rely above all on how the patient is able to cope with the chronic disease, to help him adapt and improve his quality of life. The patients with functional digestive disorders we met used so-called avoidance strategies (emotional and distractive coping). Self-management programs can be offered to them, these techniques being already used for a variety of chronic diseases such as diabetes and asthma. The main goal of these self-management programs is to give the patient an active role in controlling, stabilizing, or slowing his disease and preventing unwanted consequences and complications.

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## APPENDIX 1

### INFORMATION FOR THE PATIENTS

Dear Sir or Madam,

We would like to better understand the impact of the functional digestive disorders on your quality of life and to improve care for patients. So, your participation will be particularly valuable in a study which the aim is to estimate your experience about the announcement of the recurrence of your cancer. This study involves two times. The first time is an interview lasting approximately one hour, to better understand the way you cope with the disease. The second time will be held by emailing about three months after the first meeting.

During this interview, the psychologist will ask you to complete various questionnaires, to relate the way you are and behave in everyday life and with your symptoms.

This assessment won't affect your medical care. You can feel free to stop participating if you want and without having to explain it.

We will ensure anonymity and privacy of your answers throughout your participation, and they will be protected by medical confidentiality. We are aware that such participation may require efforts. So, thank you in advance for your help.



**Section 5**  
**Clinical Psychology**



## Chapter #19

# THE BENEFITS OF CONNECTING TO PEOPLE AND ACTIVITIES: IMPROVING WELLNESS OF CANCER SURVIVORS

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### ABSTRACT

Cancer survivors often report increased mental health concerns as well as lowered physical and psychological well-being and average quality of life (QoL). Positive lifestyle variables, including social connectedness, leisure activity, and mindfulness practices are associated with increased QoL in cancer patients. Thus, our purpose was to examine overall how two modifiable factors, social connectivity, and productive leisure were associated with overall well-being. In this study, 388 cancer survivors completed an online questionnaire package that included a detailed demographic questionnaire with medical and online support and leisure activity questions. Additional measures were included to assess QoL, social connectedness, and mindfulness. Regression results indicated that increased QoL was predicted by increased self-acceptance and engagement in a variety of leisure activities, as well as lower family and romantic loneliness. Encouraging family and romantic support, as well as a variety of non-passive leisure activities, and normalizing negative emotions surrounding diagnosis and disease symptoms are all ways that overall QoL can be improved.

*Keywords:* cancer survivorship, quality of life, leisure satisfaction, social connectedness, mindfulness.

### 1. INTRODUCTION

As the second leading cause of death worldwide (WHO, 2021), the impact of cancer is felt in all countries and the "cancer experience" extends beyond diagnosis, treatment, and end-of-life care. Relative to individuals who have not had a cancer diagnosis, survivors report increased mental health concerns as well as lowered physical and psychological well-being (Langeveld, Grootenhuys, De Haan, & Van Den Bos, 2004). Health-related quality of life (QoL) encompasses overall physical (e.g., energy, fatigue, pain) and psychological functioning (e.g., emotional well-being), as well as general health perceptions (Hays & Morales, 2001). Over 80% of cancer patients report below-average QoL scores, with the lowest scores found in the general, physical, and psychological well-being domains compared to the familial, cognitive, and economic well-being domains (Nayak et al., 2017).

Productive leisure, mindfulness, and social connectedness are positive lifestyle variables associated with increased QoL in cancer survivors (Fangel, Panobianco, Kebbe, de Almeida, & de Oliveira Gozzo, 2013; Garland et al., 2017). Given that these factors are modifiable, targeted research could inform the development of programs aimed at increasing wellness via targeted changes in mindfulness, leisure activities, and connectivity. Leisure satisfaction encompasses how one perceives their leisure activities and choices (Beard & Ragheb, 1980); both satisfaction with leisure activities and frequency of participation are correlated with higher life satisfaction in the general population (Pressman et al., 2009). Due

to its debilitating consequences, cancer treatment and survivorship are negatively related to participation and satisfaction with leisure activities (Shipp, McKinstry, & Pearson, 2015), resulting in 34% decrease in physical activity three months post-treatment, and a 16% decrease in social activities (Lyons, Lambert, Balan, Hegel, & Bartels, 2013). According to Chun and colleagues (2016), the leisure satisfaction of survivors is stronger predictor of an increased sense of purpose than sheer number of leisure activities, lifetime trauma occurrence, and related demographic factors. Although some studies suggest that leisure activity declines with age (Frazier, Johnson, Gonzalez, & Kafka, 2002), recent studies suggest that the decline is more strongly related to physical health constraints rather than older age (Paggi, Jopp, & Hertzog, 2016) and, thus, research comparing the impact of the macro-level (frequency of leisure activities) versus micro-level (specific leisure activities) versus mid-level (categories of leisure activities) perspectives on individuals' QoL is needed (Nimrod & Shrira, 2016).

Dispositional mindfulness involves "paying attention in a particular way: on purpose, in the present moment, and non-judgementally" (Kabat-Zinn, 1994, p. 4) and is associated with increased satisfaction with life, largely because mindfulness fosters more positive self-evaluations (Kong, Wang, & Zhao, 2014). Mindfulness-based interventions can improve several aspects of emotional well-being by reducing anxiety, depression, stress, and pain acceptance (Geiger et al., 2016). In cancer patients, dispositional mindfulness is associated with lower anxiety, depression, and posttraumatic stress disorder (Liu, Li, Zhang, Zhao, & Xu, 2021) and increased focus on favourable experiences, resulting in increased quality of life (QoL; Garland et al., 2017). Given the impact of mindfulness on overall psychological well-being and the efficacy of short programs, the training and implementation of mindfulness practices in survivors could be beneficial.

Social support describes the supportive ways in which people behave in a social context (Helgeson, 2003). Social connectedness is related to improved cancer outcomes, including decreased risk of cancer mortality and favourable prognosis (Garssen, 2004; Kroenke, Kubzansky, Schernhammer, Holmes, & Kawachi, 2006), with positive associations between perceived social support, physical health, and psychological well-being (Kahn, Hessler, & Russell, 2003). Social support is associated with reduced depressive symptoms (Sayal, Checkley, Rees, Jacobs, Harris, Papadopoulos, & Poon, 2002) as well as long term health benefits, including better immune functioning, physical mobility, lower blood pressure, and a faster recovery time from health problems (Hogan, Linden, & Najarian, 2002). In a comprehensive meta-analysis, Pinquart and Duberstein (2010) examined the effects of social support on cancer mortality and focused on the efficacy of interventions to increase social connectivity. In this meta-analysis, results indicated a positive association between mortality and perceptions of social support, the size of a support network, and marital status (individuals who are married had lower mortality), with an overall decrease in mortality of 12 – 25%. The links between social support and overall wellness coupled with the fact that survivors report moderate to moderately high loneliness levels, which increase with time since the initial diagnosis (Deckx, van den Akker, & Buntinx, 2014), suggest that focusing on the positive effects of social connectivity could elucidate strategies to decrease loneliness and ultimately increase social connectivity in survivors.

### **1.1. Purpose of the current study**

Considering the high prevalence of cancer and its associated detrimental consequences, more research on improving survivors' QoL is needed. Given that modifiable factors can have a positive impact on both physical and psychological health, the primary purpose of this study was to examine how medical and social support, engagement in leisure activities, and

mindfulness practices improved the QoL in cancer survivors. A secondary goal of this study was to investigate whether leisure satisfaction, compared to types of leisure activities, would contribute more to survivors QoL.

## 2. METHOD

In total, 388 cancer survivors ( $M_{\text{age}} = 53.58$ ,  $SD = 13.58$ ) completed an online questionnaire package (73.9% females). The age of participants ranged from 16–89 years old ( $M_{\text{age}} = 54$ ), and years since the diagnosis ranged from 0 to 37 years ( $M = 11.98$  years). Overall, 33.6% of respondents had an initial diagnosis of cancer in stages 0–2, while 54.9% reported that their cancer was at stages 3–4 at diagnosis (11.5% did not know their stage). At the time of the study, 25.1% of survivors had experienced a cancer relapse, and 94.4% of participants reported having received cancer treatment.

The online questionnaire package included a demographic questionnaire with questions about medical support (e.g., “Looking back on all of your treatment, how often did you feel like you could talk to your doctors (or nurses) about any concerns related to your treatment?”). Leisure engagement was measured by asking participants to indicate (yes, no) if they participated in 13 different types of leisure activities. Activities were categorized as stimulating (board games/cards, crafts/hobbies, religion), passive (television and computer based, including social media and shopping), physical (exercise, travelling), and social (socializing at home and in public). A total score was calculated to assess overall engagement. The **Quality of Life of Cancer Patients Questionnaire** (QLQ-C30; Aaronson et al., 1993) includes functional subscales (Physical, Role, Cognitive, Emotional, Social, and Financial;  $\alpha = .69$  to  $.91$ ), symptom subscales (Fatigue, Pain, and Nausea and Vomiting;  $\alpha = .62$  to  $.82$ ), and a Global Health and Quality of Life subscale ( $\alpha = .83$ ). The 30-item questionnaire uses a 4-point Likert scale ranging from 1 (*not at all*) to 4 (*very much*), with higher scores indicating better functioning. The short form of the **Social and Emotional Loneliness Scale for Adults** (SELSA-S; DiTommaso et al., 2004) includes three subscales: Social ( $\alpha = .86$ ), Romantic ( $\alpha = .89$ ), and Family ( $\alpha = .89$ ) loneliness. The 15-item questionnaire uses a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A higher score represents high levels of emotional and social loneliness. The **Adolescent and Adult Mindfulness Scale** (AAMS; Drouman, Golub, Oganessian, & Read, 2018) includes four subscales: Attention and Awareness (AAMS: AA;  $\alpha = .85$ ), Self-Acceptant (AAMS: SA;  $\alpha = .83$ ), Non-Judgemental (AAMS: NJ;  $\alpha = .76$ ), and Non-Reactive (AAMS: NR;  $\alpha = .84$ ). The 19-item questionnaire uses a 5-point Likert scale ranging from 1 (*never true*) to 5 (*always true*), with higher scores indicating increased mindfulness. The **Leisure Satisfaction Scale** (LSS; Coyle et al., 1994) includes 5 items measured on a 5-point Likert scale from 1 (*very dissatisfied*) to 5 (*very satisfied*), with higher total scores indicating greater satisfaction ( $\alpha = .86$ ).

## 3. RESULTS AND DISCUSSION

Nolte et al. (2019) collected data from over 15,000 individuals (416 individuals reported a current cancer diagnosis) from Europe, Canada, and the United States to determine normative data for the QLQ-C30. The QoL scores in the current study were lower than those reported by Nolte et al. (66.10 vs. 56.61; see Table 1) and slightly lower than the QoL in a sample of individuals in remission or cured (Van Leeuwen et al., 2018). QoL of our participants did not improve in the years after initial cancer diagnosis,  $F(3,221) = 1.96$ ,

$p = .121$ . Further, time since diagnosis did not affect overall leisure engagement, medical support, and social connectedness, except for family loneliness,  $F(3, 225) = 4.36, p = .005$ , in which higher loneliness was reported by individuals who were more than five years post diagnosis.

*Table 1.*  
*Mean/Standard Deviation on Relevant Variables as a Function of Years Since Diagnosis.*

Variable	Overall	< 2 years	2–5 years	5–10 years	> 10 years
QLC–C30 summary	56.61/23.84	52.01/20.79	55.76/25.78	58.11/26.24	63.96/18.85
Leisure engagement	8.18/2.58	7.99/2.62	8.07/2.62	8.39/2.53	8.55/2.51
AAMS: AA	3.24/0.89	3.12/0.84	3.22/0.94	3.38/0.76	3.29/0.93
AAMS: NR	2.44/1.01	2.47/1.01	2.45/1.06	2.41/0.91	2.43/1.02
AAMS: NJ	3.37/0.92	3.35/0.87	3.40/0.91	3.12/0.84	3.53/1.03
AAMS: SA	3.58/1.01	3.56/1.02	3.52/0.99	3.59/0.91	3.74/1.13
SELSA: Family	12.92/7.61	11.23/6.80	12.09/7.53	14.08/7.52	16.37/8.06
SELSA: Romantic	16.94/9.05	15.61/8.71	16.39/9.19	18.08/8.73	19.18/9.31
SELSA: Social	14.78/7.26	13.33/7.18	14.84/7.10	15.35/7.23	16.21/7.71
Medical support	2.62/0.92	2.71/0.80	2.68/0.98	2.59/0.90	2.41/0.96
Age	53.06/13.79				

*Note.* QLC–C30 = Quality of Life of Cancer Patients Questionnaire; AAMS = Adolescent and Adult Mindfulness Scale; AA = Attention and Awareness; NR = Adolescent and Adult Mindfulness Scale: Non-Reactive; NJ = Non-Judgemental; SA = Self-Acceptant; SELSA = Social and Emotional Loneliness Scale for Adults–Short form.

The correlations between the QLQ-C30 summary score and its subscales (Physical, Emotional, Role, Cognitive, Social, and Financial Functioning), as well as leisure engagement, medical support, and AAMS subscales (Self-Acceptant, Non-Judgemental, Non-Reactive) were statistically significant (see Table 2). There were statistically significant positive correlations between all QLC-C30 subscales, except for Financial Functioning, wherein the correlations were statistically significant but negative. Further, years since diagnosis was only significantly and positively associated with family loneliness ( $r = .24, p < .001$ ). Greater perceived medical support was significantly related to higher QoL and its components, higher levels of leisure engagement, two AAMS subscales (Non-Reactive and Self-Acceptant), and all SELSA subscales. Although medical support and leisure engagement is scarcely researched, these findings highlight the impact of improved communication with healthcare professionals and about the importance of leisure activities and engagement on improving QoL. Further, the Non-Reactive and Self-Acceptant components of the AAMS reflect an individual’s ability to practice self-compassion and acceptance of both positive and negative thoughts and feelings without trying to change them or label them as wrong or invalid. All these components are individually related to improve QOL.

Table 2.  
Correlations between Mindfulness, Leisure Engagement and Satisfaction, and Social Connectivity.

Variable	QLC-C30: Global Health Score	QLC-C30: Physical Functioning	QLC-C30: Emotional Functioning	QLC-C30: Role Functioning	QLC-C30: Cognitive Functioning	QLC-C30: Social Functioning	QLC-C30: Financial Functioning
Leisure engagement	.31**	.30**	.25**	.22**	.24**	.26**	-.30**
Leisure satisfaction	.51**	.27**	.51**	.28**	.42**	.31**	-.29**
AAMS: AA	.05	-.08	-.06	-.11	-.07	-.08	.06
AAMS: NR	.04	.04	-.38**	-.06*	-.37**	.00	-.00
AAMS: NJ	.04	.00	.20**	.07	.18**	-.00	.01
AAMS: SA	.31**	.19**	.51**	.19**	.38**	.24**	-.20**
SELSA: Family	-.37**	-.27**	-.39**	-.24*	-.34**	-.30**	.32**
SELSA: Romantic	-.14**	-.05	-.19**	-.06	-.12**	-.07	.14**
SELSA: Social	-.36**	-.24*	-.37**	-.20**	-.32**	-.25**	.29**
Medical support	.22**	.16**	.24**	.13*	.20**	.16**	-.18**
Years since diagnosis	.08	-.02	-.09	.03	-.04	-.02	-.05

Note. QLC-C30 = Quality of Life of Cancer Patients Questionnaire; Note. QLC-C30 = Quality of Life of Cancer Patients Questionnaire; AAMS = Adolescent and Adult Mindfulness Scale; AA = Attention and Awareness; NR = Adolescent and Adult Mindfulness Scale: Non-Reactive; NJ = Non-Judgemental; SA = Self-Acceptant; SELSA = Social and Emotional Loneliness Scale for Adults-Short form.

\* $p < .05$ . \*\* $p < .01$ .

On average, survivors participated in 8.59 ( $SD = 2.32$ ) leisure activities. Overall, 10.3% of the participants reported engaging in stimulating leisure activities ( $n = 40$ ), 24.5% participated in passive leisure activities ( $n = 95$ ), 44.6% reported engaging in physical leisure activities ( $n = 173$ ), and 8.8% reported participating in social leisure activities ( $n = 34$ ).

Correlations between categories of leisure activities and leisure satisfaction, QoL, social connectedness, and age are presented in Table 3. Overall, increased engagement in stimulating, physical, and social activities was associated with higher QoL and leisure satisfaction as well as lower loneliness. It is interesting to note that age was associated with lower physical and social engagement.

*Table 3.*  
*Significant Differences According to Categories of Leisure Activity in QoL, Social Connectedness, and Age.*

Variable	Stimulating	Passive	Physical	Social
QLC-C30 Global Health	.280***	.089	.338***	.300***
LSS	.362***	.065	.286**	.328***
SELSA: Family	-.188**	-.048	-.256***	-.302***
SELSA: Romantic	-.263**	-.072	-.191**	-.294***
SELSA: Social	-.314***	-.106	-.237***	-.419***
Age	.034	-.065	-.125*	-.148*

*Note.* QLC-C30 = Quality of Life of Cancer Patients Questionnaire; LSS = Leisure Satisfaction Scale; SELSA = Social and Emotional Loneliness Scale for Adults-Short Form. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

A hierarchical multiple regression was conducted to examine factors that predict QoL. Demographic (age, sex) and disease variables (years since diagnosis, relapse) were entered in Block 1; medical support and loneliness (family, social, and romantic) were entered in Block 2; mindfulness subscales, leisure engagement, and leisure satisfaction were entered Block 3; and an interaction term (productive leisure; engagement x satisfaction) was entered in Block 4. The interaction term was computed to determine if leisure satisfaction moderated the relationship between leisure engagement and QoL. The overall model was statistically significant,  $F(15, 190) = 8.55, p < .001$ , and accounted for 65.0% of the variability. Block 1 demographic variables were not statistically significant. Block 2 explained a unique 17.3% of the variance,  $F_{\text{change}}(4, 182) = 9.79, p < .001$ , with family loneliness ( $p = .010$ ) and romantic loneliness ( $p = .016$ ) contributing to the model. Block 3 accounted for an additional 22.5% of the variability,  $F_{\text{change}}(6, 176) = 11.42, p < .001$ , with AAMS-Self-Acceptant ( $p = .013$ ) and leisure satisfaction ( $p = .005$ ) contributing significantly to the model. The Block 4 interaction term was not statistically significant; however, the main effect of leisure engagement was statistically significant ( $p = .015$ ). Thus, survivors who reported lower family and romantic loneliness, as well as greater self-acceptance, leisure satisfaction, and leisure engagement experienced higher overall QoL.

As the result of medical and treatment advances, many individuals will survive a cancer diagnosis and, at some point after treatment, return to everyday activities. Researchers have traditionally focused primarily on the impact of cancer during diagnosis and treatment, with the goal for many survivors to get through treatment to return to a "normal" life, with "normal" activities. Although some psychological and emotional consequences of diagnosis and treatment are not as immediately significant, their importance for survivors increases in the months and years after diagnosis. QoL measures generally assess global functioning,

current symptoms, and overall physical, emotional, and cognitive functioning but often exclude other lifestyle factors that are not directly related to cancer. Thus, our purpose was to examine how modifiable lifestyle factors influenced quality of life in cancer survivors.

In this study, disease characteristics, including the time since diagnosis and relapse, did not significantly contribute to overall QoL; however, individuals who were more than five years post diagnosis reported higher family loneliness. Age, rather than cancer, likely underlies this finding; as years since diagnosis increase, so does age, and older age is associated with loss of family (CDCP, 2021). Further, QLQ-C30 scores of current participants were significantly lower than previous studies (Van Leeuwen et al., 2018), likely because some of the current participants were newly diagnosed and not yet through their treatment. Although physical symptoms and functioning might improve in the years after treatment, education and programs focused on social and emotional functioning could improve overall QoL. This research also highlights that the impact of family and romantic support extends beyond disease characteristics in survivors. Survivors who have a strong support network, that includes their family and romantic partners, reported better physical and mental health functioning.

At the correlational level, increased mindfulness (apart from acting with awareness) was associated with higher QoL. Further, in regression analyses, the self-acceptance component of mindfulness predicted overall quality of life, which lends insight into how different aspects of mindfulness can influence a patient's QoL. These results are in line with Best and colleagues (2019) who reported that aspects of mindfulness that focus on an awareness of bodily experiences might increase positive and negative physical experiences. In the current study, self-acceptance, a mindfulness subscale focused on acceptance of personal emotions, predicted higher QoL. Individuals who label their emotions “wrong” or think that they “shouldn't be feeling this way” have low levels of self-acceptance and lower QoL. These results replicate Garland et al. (2017) and indicate that being able to accept your own emotions, even if they are negative, is associated with more positive outcomes.

Although researchers typically examine the influence of leisure by focusing on leisure satisfaction as a predictor of health, we examined how the type of leisure activities, leisure engagement, leisure satisfaction, and productive leisure impacted overall QoL and social connectedness. In the current study, greater social connectedness was associated with increased engagement in stimulating, physical, and social activities. Survivors who participated in non-passive leisure activities had significantly higher QoL, which replicates Chun and colleagues (2016) and extends results on the impacts of physical activity on QoL in the general population (Anokye, Trueman, Green, Pavey, & Taylor, 2012). Further, because leisure engagement is not activity dependent but focuses on whether an individual engages in a variety of leisure activities, there are benefits of participating in different types of activities. In addition, although current findings indicated that leisure satisfaction did not moderate the relationship between leisure engagement and QoL, leisure satisfaction had a statistically significant positive effect on QoL. Further, the current results replicated research that has shown the positive impacts of leisure activities and mindfulness on overall QoL in cancer patients (Fangel et al., 2013; Garland et al., 2017), but takes it a step further and examines which aspects had the greatest impact.

Loneliness negatively impacts cancer outcomes (Garsen, 2004; Kroenke et al., 2006) and, therefore, we examined the effects of family, social, and romantic loneliness. All three aspects of loneliness were significantly correlated to the overall QoL scores; however, only family loneliness and romantic loneliness were significant predictors in the regression model. It is possible that given the age of the survivors ( $M_{age} = 53.54$ ) and the fact that 62.5% were currently in a romantic relationship, the measurement of “family” may include one's

romantic partner. Previous research supports that higher family support in patients with chronic illness improves medical compliance, which may improve overall health (Mongan & Fajar, 2017). Although medical support was positively associated with QoL, it was not a statistically significant predictor of QoL. Medical support questions in this study focused on whether participants were satisfied with their involvement in their treatment choices and how much they felt their medical team listened to their concerns. It is possible that when patients feel comfortable with their practitioners and understand their medical treatment, their treatment compliance and satisfaction with disease outcomes increases. Current literature supports that a positive patient-clinician relationship improves medical compliance in cancer patients, however the questions included in this study may not have fully captured this phenomenon (Chou et al., 2017).

Finally, our results indicated that older individuals were less likely to engage in physical and social activities, which was associated with both higher QoL and social connectedness. The importance of physical activity on quality of life and life satisfaction in older individuals' replicates Rejeski and Mihalko (2001) and Maher and colleagues (2015), who found that engaging in physical activity facilitated the pursuit of goals and increased self-efficacy, which in turn improved life satisfaction in older adults. Therefore, therapeutic interventions designed to improve survivors' QoL and social connectedness should focus on increasing participation in physical and social leisure activities that older patients enjoy, rather than focusing on stimulating and passive activities.

### **3.1. Limitations and future research directions**

Although self-report data is easier to administer and to obtain a large sample size, this method of data collection has limitations and biases which include social desirability bias and introspective inaccuracy. A small number of our sample did not know all details of their diagnosis (e.g., cancer stage). Further, the term "cancer survivor" is poorly defined and, for some, it may include individuals actively living with cancer. Future studies should clearly define the term "cancer survivor" according to their desired sample. Additionally, the lower self-reported QoL scores reported by survivors illustrate the importance of investigating the mitigating factors that could improve overall well-being. The current findings, specifically that survivors who reported less family and romantic loneliness, as well as greater self-acceptance, leisure satisfaction and leisure engagement experienced higher overall QoL, serve as a direction for future research. Subsequent studies should further expand on the factors decreasing family and romantic loneliness and increasing physical and social leisure activities in cancer patients. More research further comparing specific physical leisure activities, versus other types of activities, in other positive outcome measures in survivors, such as disease prognosis is needed.

## **4. CONCLUSION**

This study further examined the relationship between QoL in survivors and focused on modifiable lifestyle variables that could improve QoL and functioning. Factors such as family and romantic support, acceptance of one's positive and negative feelings and satisfaction with one's leisure activities are significantly associated with higher levels of QoL. These findings are useful in the hands of health care practitioners who are interacting with patients during cancer diagnosis and treatment. Encouraging family and romantic support, participation in a variety of physically possible leisure activities, and normalizing negative emotions surrounding diagnosis and disease symptoms are all ways that overall QoL can be improved.

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## Chapter #20

# THE EFFECTIVENESS OF A MUTUAL EXCHANGE SUPPORT PROGRAM FOR PARENTS OF CHILDREN WITH DEVELOPMENT DISORDERS

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### ABSTRACT

There is an urgent need to support families of children with developmental disorders, especially when such families must help each other. However, practice and research related to support systems for families have only recently begun in Japan. Considering these issues, the authors developed a program to support mutual exchanges among parents of children with developmental disorders. This study aimed to verify the effectiveness of the program and examine the relationship between participants' program experience and its effectiveness. The participants included 21 male and female parents of children with developmental disorders. Effectiveness indicators included the Profile of Mood States 2nd Edition-Adult Short (POMS2-A) (before and after implementation), Session Impact Scale (SIS), and Interaction Experience Rating Scale (IERS). This study indicated that our program had the effect of reducing negative feelings for parents of children with developmental disorders through a comparison of pre-and post-program data, as well as the correlation between IERS item responses and the amount of change in mood states, particularly reflecting on their own children. Additionally, the relationship between the participants' evaluation of the program and the change in their POMS2-A scores following the intervention should be examined with a larger sample.

*Keywords:* developmental disorder, family support, interaction support, program development, profile of mood states 2<sup>nd</sup> edition.

### 1. INTRODUCTION

Parents who are raising children with developmental disorders, face challenges in terms of mental health (Hayes & Watson, 2013) and family functions (Jellet, Wood, Giallo, & Seymour, 2015). Their difficulties are invisible and cannot be shared with other people (Jellet et al., 2015). Solomon, Pistra, and Barker (2001) reported that parents of children with developmental disorders and special needs had feelings of grief, loss, and guilt; they commonly experienced psychological, social, financial worries, stress, ill health, and political consequences such as isolation and social marginalization, stigmatization, and disempowerment. Specifically, common challenges include "I don't know how to treat my child," "My family gets tired of being overwhelmed by my child's behavior," "I am worried about the future," "People around us don't understand my child or our feelings," and "I am worried about my siblings."

Jellet et al. (2015) investigated the relationship between child behavior problems and family functioning in families where a preschooler has an autism spectrum disorder (ASD). The study indicated that behavioral problems in children with ASD were associated with

depressive symptoms, such as stress and fatigue, in parents and less effective family functioning. Parents' depressive symptoms such as low mood and lack of enthusiasm and initiative can make it harder for them to function, which can then impact family life.

Solomon et al. (2001) investigated the benefits of mutual support groups for parents of children with disabilities. The study showed that parents of children with disabilities and special needs who belonged to a support group experienced changes in three broad areas: sociopolitical, interpersonal, and intraindividual, leading to a change in identity for parents. First, parents in the groups experienced changes in the outside world (in the sociopolitical domain), gaining a sense of control and agency. These changes were partly derived from the "experiential knowledge" shared by people who had experienced similar situations. Second, parents experienced changes in the interpersonal domain, such as belonging to a community, being understood, and accepted, as well as having friendships and social networks where they could share emotions and feel more "normal." Third, parents experienced changes in the intraindividual domain, such as feelings of increased self-esteem and confidence, less guilt and self-blame, and greater acceptance of their child's disorders. This study suggested that the groups seemed to enable these parents to define themselves more positively and to ascribe more positive meanings to having a disabled child. Additionally, in the study, parents who rated their group as highly focused on self-discovery were more satisfied and found the groups more helpful, suggesting that the opportunity to explore and develop one's own sense of self was a key component of a positive group experience.

In Japan, the law for supporting people with developmental disorders was amended in 2008 and revised in 2016. There are three main aims of the law: first, to define developmental disorders and promote their understanding; second, to promote support for people with developmental disorders; and finally, to achieve close cooperation among mutual sections responsible for supporting people with developmental disorders (Ministry of Health, Labour and Welfare, 2016). According to this law, it is very important to include families to promote support systems for people with developmental disorders.

There is an urgent need to establish a system to facilitate mutual support among people with developmental disorders and their families. The importance of support and connection among parents has been demonstrated by numerous practices and initiatives in Japan and abroad, such as the Parent Mentor Program (Haraguchi, Ogura, Yamaguchi, & Inoue, 2020; Inoue, 2008; Santelli, Turnbull, Marquis, & Lerner, 1995). Such activities are not limited to developmental disorders. They have been implemented in several initiatives in Japan and abroad. Parents can alleviate their loneliness during child rearing by participating in such activities. Further, they can gain a sense of security (Ainbinder et al., 1998), and feel empowered (Law, King, Stewart, & King, 2002) through their participation. Besides positive psychological changes, such as information acquisition (Inoue, 2008) and improvement of skills (Law et al., 2002), parents can gain valuable skills and knowledge with regard to parenting. These previous studies suggest that parents who share similar experiences can benefit from mutual interactions in various ways.

Against this background, the Ministry of Health, Labor, and Welfare (2019) proposed the creation and expansion of a new set of family support services. However, even the Parent Mentor program—currently the most systematic program of its kind in Japan—has commenced only recently. The need for further discussion on effective activities and support systems is thus evident (Haraguchi, Kato, & Inoue, 2015).

Porter and Loveland (2018) reviewed 15 primary research articles (2000–2015) on parenting stress in mothers of Japanese children with autism to identify the factors that influence parenting stress in such mothers. They indicated that Japanese mothers demonstrated stress related to attachment difficulties, low parenting efficacy, and lack of

support, reflecting Japanese parenting styles and gender ideology. They suggested that parent-directed and culturally calibrated interventions are needed to support parents of children with autism, especially parents who belong to a cultural minority.

Previous studies have emphasized the need for various child-centered services, while highlighting their utility for the mental health of parents (especially, depressive states and low mood) to maintain effective family functioning.

## **2. OBJECTIVES**

The authors have been working with the Developmental Disabilities Support Center of Saga Prefecture (hereinafter referred to as YUI) for over 10 years to train mentors for parents of children with developmental disorders. Based on this experience, we developed a parental support program for parents of children with developmental disabilities that allowed them to experience mutual support in a safe and professionally structured setting. Based on the awareness of previous research and our empirical problem, we developed a program to support mutual interactions among these parents.

The purpose of this study was to determine whether our program had an effect on the mood states of parents of children with developmental disorders, and whether changes in mood states were related to parents' experience of the program.

## **3. METHODS**

### **3.1. Target group**

The program that we developed for parents of children with developmental disorders was announced through program flyers and YUI's website in the Saga area. Twenty-one male and female parents of children with developmental disorders voluntarily participated in the study. Their ages ranged from 30s to 50s (4 in their 30s, 14 in their 40s, and 3 in their 50s). The demographics of the children were as follows: three preschoolers, three in the first or second year of elementary school, five in the third or fourth year of elementary school, one in the upper grades of elementary school, two in junior high school, and seven in high school or older (including siblings). The children's diagnoses were as follows: autism spectrum disorder (ASD), 13 (including one suspected case); ASD + attention deficit hyperactivity disorder (ADHD) + learning disorders (LD), 3; ASD + intellectual disorders (ID), 1; developmental disorders (DD) + ADHD + developmental coordination disorder (DC), 1; none, 1; not reported, 2.

Table 1.  
Participant demographics.

Demographics	n = 21	
	n	%
Children's stage		
Preschoolers	3	14.3
First or second year of elementary school	3	14.3
Third or fourth year of elementary school	5	23.8
Upper grades of elementary school	1	4.8
Junior high school	2	9.5
High school	7	33.3
Children's diagnoses		
ASD	13	61.9
ASD+ADHD+LD	3	14.3
ASD+ID	1	4.8
DD+ADHD+DC	1	4.8
None	1	4.8
Not reported	2	9.5
Parent's Age		
30s	4	19.0
40s	14	66.7
50s	3	14.3

Note. Including sibling. ASD = autism spectrum disorder ; ADHD = attention deficit hyperactivity disorder ; LD = learning disorders ; ID = intellectual disorders ; DD = developmental disorders ; DC = developmental coordination disorder

### 3.2. Procedures

In this study, we examined the program's effectiveness through parents' mood, session helpfulness, and interaction experience. This study investigated the relationship between the program experience's evaluation and its effects and clarified the program's mechanism.

The procedures were programmed to (0) answer for index (pre-POMS2), (1) Mini-lecture on common experiences (e.g., the various experiences and stresses of parents with children with developmental disorders), (2) Reflection on the good aspects and efforts of children and parents (e.g., individuals will be asked to reflect on their daily activities by writing them down on a worksheet), (3) listening training (e.g., explanation of the key points of listening and practice), (4) group work using psycho-educational methods (e.g., share the content of the reflection with the group of parents), (5) question-and-answer session and free talk time (e.g., communicate with staff about the program itself and any questions that arise during sharing), (6) answering for indices (post-POMS2, IER, and SIS), and (7) free talk time

(e.g., parents who want to talk are free to talk to other parents and staff). We planned the program in a manner that enabled the participants to have mutual interactions throughout.

The sessions were 2 hours long, with mini-lectures lasting about 30 minutes and group work lasting about 1 hour and 10 minutes. In addition, there was one session each.

The program was implemented by one main staff member and three to four support staff members. Support staff members joined the groups and acted as facilitators. All staff members were licensed psychologists.

### **3.3. Effect indices and data analysis**

The POMS2-A, which has been used to explore the effectiveness of a wide range of clinical interventions, was implemented at pre-and post-program sessions to evaluate changes in participants' mood states.

Following Solomon et al. (2001), session helpfulness was measured using a single-item measure employed by Elliot and Wexler's Session Impact Scale (SIS) (Elliot & Wexler, 1994) that asked, "Please rate how helpful or unhelpful to you the group is, overall." The response scale ranged from 1 (extremely unhelpful) to 9 (extremely helpful) with a neutral midpoint (neither helpful nor unhelpful). This measure is highly correlated with other, more complex, indices of helpfulness (Stiles et al., 1994).

We originally developed the interaction experience rating scale (IERS) (17 items) to assess participants' experiences regarding mutual support. This scale was based on participants' self-reports in the previous trial sessions. Participants responded to each item on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

SIS and IERC scales were implemented after the program.

IBM SPSS Statistics 27 software was used to analyze the data. A *t*-test was performed to examine the POMS2-A pre-and post-program implementation, and Spearman's rank correlation analysis was conducted to identify the relationship between participants' evaluation of the interaction support program and its effect on mood states. We compared their pre-and post-program scores on the POMS2-A with their scores on the IERS items.

## **4. RESULT**

### **4.1. Effectiveness of the implementation of the program**

#### **4.1.1. Effects of the program for parents' helpfulness**

Participants' helpfulness in the single-item SIS average score was 8.0 ( $n=21$ , minimum=5, maximum=9,  $SD=1.00$ ), which is considered very high.

#### **4.1.2. Effects of the program for parents' mood states**

The effects of the program implementation are shown in Table 1. The Time 1 (pre-program) POMS2 scores on AH, CB, DD, FI, and TA were significantly higher than the Time 2 (post-program) scores. No significant differences were observed in the F, VA, and total mood disturbance (TMD) scores (Table 2).

*Table 2.*  
*Comparison on the POMS2-A before and after the program.*

Variable	Time 1		Time 2		<i>t</i> (21)	<i>p</i>	95% CI		Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			<i>LL</i>	<i>UL</i>	
AH	49.00	9.31	40.90	4.55	4.77	<.001	4.56	11.63	1.04
CB	53.90	9.68	46.38	7.21	4.31	<.001	3.88	11.16	0.94
DD	51.24	9.16	46.62	7.23	2.88	.009	1.28	7.96	0.63
FI	48.76	14.30	38.67	5.94	3.63	.002	4.29	15.90	0.79
TA	52.76	12.13	44.62	8.47	3.61	.002	3.43	12.85	0.79
VA	52.57	8.66	55.05	10.23	-1.75	.095	-5.42	0.47	-0.38
F	55.00	8.25	57.71	12.12	-1.72	.100	-6.00	0.57	-0.38
TMD	50.58	11.10	47.09	7.07	1.72	.101	-7.39	7.69	0.38

Note. CI = confidence interval; LL lower limit; UL upper limit; AH = Anger-Hostility; CB = Confusion-Bewilderment; DD = Depression-Dejection; FI = Fatigue-Inertia; TA = Tension-Anxiety; VA = Vigor-Activity; F = Friendliness; TMD = Total Mood Disturbance.

#### 4.1.3. Effects of the program on parents' experiences

The authors created items of the IERS using free descriptions of the program obtained before the survey was conducted. Cronbach's alpha was used to test the questionnaire's reliability, yielding a coefficient of 0.87, and Guttman's folded half method reliability yielded a coefficient of 0.73—close to 1. Table 3 shows that IERS scores, which, except for the v4 item, were very high.

*Table 3.*  
*The means of interaction experience rating scale (IERS).*

Number	Questions	means	SD
v1	I learned a lot about communication	4.05	0.74
v2	I was able to gain new perspectives and ideas through interaction with other parents	4.43	0.51
v3	I have gained new knowledge	4.33	0.58
v4	I got the information I needed to know	3.86	0.85
v5	It gave me an opportunity to reflect on my child	4.67	0.48
v6	It gave me an opportunity to reflect on myself	4.43	0.93
v7	I was able to notice the good things about my child	4.43	0.68
v8	I was able to notice my child's efforts	4.57	0.60
v9	I could notice my own efforts	4.43	0.68
v10	It gave me an opportunity to interact with other parents	4.76	0.44
v11	I felt safe talking to other parents	4.62	0.50
v12	I felt more comfortable through interaction with other parents	4.43	0.51
v13	Interacting with other parents helped me to feel that I am not alone	4.62	0.50
v14	I was able to have a good time through interaction with other parents	4.52	0.51
v15	I will try to attend the next course when it is held	4.52	0.75
v16	I would like to have more opportunities to interact with other parents in the future	4.62	0.50
v17	Increased motivation to raise children in the future	4.38	0.59

IERS: Interaction Experience Rating Scale

#### 4.2. Relationship between program evaluation and the amount of change in POMS2-A

Spearman’s rank correlation analysis was used to investigate the effectiveness of the program content (Table 4). The results showed that single-item SIS scores were not associated with any changes in the state of a participant’s mood. One of the IERS items, “It gave me an opportunity to reflect on my child,” was positively correlated with a reduction in scores on CB ( $r(21)=.589$ ,  $p < 0.01$ ), DD ( $r(21)=.436$ ,  $p < 0.05$ ), FI ( $r(21)=.435$ ,  $p < 0.05$ ), TA ( $r(21)=.530$ ,  $p < 0.05$ ) and TMD ( $r(21)=.611$ ,  $p < 0.01$ ). Similarly, the item, “It gave me an opportunity to reflect on myself,” had a positive correlation with a reduction in scores on CB ( $r(21)=.598$ ,  $p < 0.01$ ). Furthermore, the items “It gave me an opportunity to interact with other parents” and “I would like to have more opportunities to interact with other parents in the future,” had a positive correlation with an increase in scores on F ( $r(21)=.471$ ,  $p < 0.05$ , and  $r(21)=.728$ ,  $p < 0.01$ , respectively).

A total of 136 correlation analyses were performed. After controlling for FDR, the eight correlations that had previously been significant association were reduced to one significant association (bolded in Table 4).

Table 4.  
Correlation between item responses and changes in the participants’ moods states.

Scale / Number	Questions	Amount of change in mood state before and after the program (Post-Pre)							
		AH	CB	DD	FI	TA	VA	F	TMD
SIS	How useful or unhelpful was this course for you?								
IERS									
v1	I learned a lot about communication								
v2	I was able to gain new perspectives and ideas through interaction with other parents								
v3	I have gained new knowledge								
v4	I got the information I needed to know								
v5	It gave me an opportunity to reflect on my child		.589**	.436*	.435*	.530*			.611**
v6	It gave me an opportunity to reflect on myself		.598**						
v7	I was able to notice the good things about my child								
v8	I was able to notice my child's efforts								
v9	I could notice my own efforts								
v10	It gave me an opportunity to interact with other parents							.471*	
v11	I felt safe talking to other parents								
v12	I felt more comfortable through interaction with other parents								
v13	Interacting with other parents helped me to feel that I am not alone								
v14	I was able to have a good time through interaction with other parents								
v15	I will try to attend the next course when it is held								
v16	I would like to have more opportunities to interact with other parents in the future							.728**	
v17	Increased motivation to raise children in the future								

Note. SIS = Session Impact Scale ; IERS = Interaction Experience Rating Scale. Bolded measures indicate measure that remained significant after False Discovery Rate (FDR) correction.

## **5. DISCUSSION**

### **5.1. Effectiveness of the implementation of the program**

#### **5.1.1. Effects of the program for parents' helpfulness**

The participants of the program felt that their group was very helpful; the helpfulness and satisfaction ratings were strongly correlated, as well as the self-discovery rating ( $r = .43$ ,  $p < .001$ ) (Solomon et al., 2001). Helpfulness can be considered an important indicator of whether a program functions effectively when viewed from multiple perspectives.

#### **5.1.2. Effects of the program for parents' mood states**

Solomon et al. (2001) reported that parents universally felt that they benefited from the opportunity to share their experiences that groups provided, by finding out other people had experienced, and were experiencing, a similar range of problems and difficulties related to having a child with disabilities.

Informal social support from friends and family reduces stress among mothers of children with ASD (Prata, Lawson, & Coelho, 2019). With regard to positive maternal outcomes, social support received from friends was associated with increased life satisfaction, positive affect, and psychological well-being, whereas partner support was associated with increased life satisfaction and psychological well-being (Ekas, Lickenbrock, & Whitan, 2010).

One of the initial goals of this study was to investigate whether our program improved parents' mental states. Our program provided mutual interaction and networking activity to parents who participated in the mini-lecture, reflection on the good aspects and efforts of children and parents, listening training, group work using psycho-educational methods, and free talk time. In the present study, negative mood states were significantly reduced after the program. It may increase parents' capacity to accept and understand their children's developmental traits and behavioral problems by sharing their experiences during group sessions. Conversely, it did not affect positive feelings (F and VA) or TMD. Japanese mothers of children with ASD may experience additional stress, because they cannot control their children's behavior or their relationship with them, even if their maternal sensitivity is high (Porter & Loveland, 2018). A previous study reported that family support operated indirectly by helping mothers become optimistic, as they confronted the challenges associated with raising a child with ASD by examining the relationship among social support, optimism, and well-being in a population experiencing high levels of distress and mothers of children with ASD (Ekas et al., 2010). The study by Ekas et al. (2010) followed the parents for how long. The current study was conducted in one session. Further, we addressed the common sense and knowledge of parents of children with developmental disorders in the mini-lecture, reflected on the good aspects and efforts of children and parents, listening training, and group work using psycho-educational methods. Participants felt safe and confident about their individual negative feelings because of the program. Therefore, it does not seem to change positive feelings or TMDs. If possible, our program could foster parents' optimism and positive mood states via long-term support. This should be investigated in future studies.

#### **5.1.3. Effects of the program on parents' experiences**

Before this study, we conducted several sessions for parents of children with developmental disorders, and the IERS was created from the self-descriptions for the evaluation of the group interaction experiences that the participants of the trial had. The IERS

allows us to learn about the participants' experience of gaining knowledge and skills related to developmental disorders, the reflection on and awareness of their new emotions, feeling safe because of mutual interaction with other parents, and the social support network. The high score of the IERS shows that participants can soften the negative impact of having children with developmental disorders (Bishop, Richler, Cain, & Lord, 2007).

Catalano, Holloway, and Mpofo (2018) suggested that practitioners' guidelines to support the mental health and well-being of parent care should include addressing the parent's self-perspective-taking and skill for real-time problem-solving, through their critical interpretive synthesis systematic review. Our lecture focused on parents' common sense and knowledge; the children's developmental disorder traits included ASD, ADHD, and learning disorder. We took an opportunity to reflect on the good aspects and efforts of children and parents, provide listening training, and group work using psycho-educational methods. The participants indicated high scores regarding reflections for themselves and their children (v5 and v6 of the IERS). Participants might have noticed their new self-perspective-taking skills gained through the program.

Regarding v4, "I got the information I needed to know," the average score was 3.86, the lowest score. It seemed that the program provided wide and common information that participants only partially needed.

The current sample showed a high prevalence of ASD (16/21 children, 76.2%). This high rate may have affected the results because of the limited content and time in the program, specifically targeting ASD. The program did not affect the positive mood states of the POMS2, even though item v17 showed a high score. Past research suggests that optimism and social support are associated with increased well-being among mothers of children with ASD (Bishop et al. 2007). Optimism was negatively associated with each of the negative maternal outcomes and positively associated with each positive maternal outcome. Higher levels of optimism are associated with increased positive outcomes and decreased negative outcomes (Ekas et al., 2010). Therefore, we speculated that participants could feel positive toward raising children; future studies need to examine this speculation to understand the value of maternal sense (IERS) in positive mood states. It was unclear whether this intervention could influence mothers' maternal sense or mood, but parents' mental health includes both of these factors. Therefore, further research is required.

## **5.2. Relationship between program evaluation and the amount of change in POMS2-A**

Social support is a critical factor in reducing the negative psychological impact of raising children with developmental disorders (Ekas et al., 2010; Jellett et al., 2015). Solomon et al. (2001) showed that the parents of children with developmental disorders or special needs in the mutual support groups experienced changes in gaining a sense of control and agency in the sociopolitical domain. These changes were derived, in part, from the "experiential knowledge" shared by people who had experienced similar issues. Parents experienced changes such as belonging to a community, being understood and accepted, and having friendships and social networks where they could share their emotions and feel more "normal" in the interpersonal domain. Finally, parents experienced changes in their feelings, such as increased self-esteem, less guilt and self-blame, and greater acceptance of their child's disorders in the intraindividual domain. In one study, parents who rated their group as highly focused on self-discovery were more satisfied and found the groups to be more helpful, suggesting that the opportunity to explore and develop one's sense of self was a key

component of a positive group experience. They needed to have the opportunity to interact with other parents with similar experiences.

In the present study, we provided mutual interaction opportunities for parents of children with developmental disorders through the program. Interestingly, the program reported that having the opportunity to reflect on themselves and their children was associated with confusion, depression, fatigue, anxiety, and TMD among parents.

The participants in this study had to define themselves more positively and ascribe more positive meanings to having a disabled child, even though the group session took place only once. Moreover, parents may increase their capacity to manage their children's behavior and the impact it can have on the overall family system.

## 6. CONCLUSIONS

The program that we developed for the parents of children with developmental disorders was effective and helpful.

This paper indicates that our program is effective in reducing negative feelings in parents of children with developmental disorders by comparing pre-and post-program data. The program also found that parents' reflection of their children and themselves was associated with a reduction in negative emotions. Their belief was that having an opportunity to meet other parents who have similar experiences increases their positive feelings.

The opportunity to interact with other parents with similar experiences in a safe and structured learning environment, and the experience of reflecting on their children together, may have helped alleviate feelings of loneliness and provided a sense of security (Ainbinder et al., 1998), even for parents meeting each other for the first time.

This paper confirms the short-term effects of the program. The program provides an opportunity for parents to get what they need. We can indicate that the program contributed to parents' mental health and maternal sense, and the experience of mutual interaction with other parents was viewed as social support.

The total single-session effectiveness of the program was examined in this study; therefore, it was unclear what factors or integrated total factors induced the present results. In the future, it is necessary to further evaluate each factor and the long-term effects of the program.

Additionally, the relationship between the participants' evaluation of the program and the change in their POMS2-A scores following the intervention should be examined with a larger sample.

This was a local area sample, which could limit the generalizability of these findings. Although the participants came from different local areas and met each other for the first time, the mutual interaction was highly favorable and contributed to their mental health. Porter and Loveland (2018) suggested that Japanese mothers also demonstrate stress related to attachment difficulties, low parenting efficacy, and lack of support, reflecting inadequacies in Japanese parenting styles and gender ideology.

Future implementation should consider parenting style, gender ideology, children's type of disorder, and the culture of the area (including the public support system for developmental disorders).

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## Chapter #21

### ANXIETY AND DEPRESSION IN POST ACUTE MYOCARDIAL INFARCTION PATIENTS DURING COVID-19 PANDEMIC

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#### ABSTRACT

**Introduction:** Anxiety and depression are common in post-infarction patients. In the current state of uncertainty in the world during the COVID-19 pandemic, these feelings may be heightened in the entire population, especially in those considered high-risk groups. **Objective:** To estimate the prevalence of anxiety and depression among infarcted patients at a cardiological Hospital of South of Brazil and to compare the case group with a community control group. **Methods:** Case-control study with post-myocardial infarction patients who were attending at a Cardiological hospital were considered eligible. A control group from the same community were added for comparative analysis. The anxiety and depression were evaluated by the HADS (Hospital Anxiety and Depression Scale). **Results:** A total of 52 patients and 104 matched controls were interviewed. The prevalence of anxiety was 36.5% and of depression 28.8% in the case group and was 31.7% and 28.8% in the control one. **Conclusions:** The prevalence of anxiety and depression was higher than those described in the literature for infarcted patients, which corroborates the hypothesis that the pandemic may be aggravating the patient's emotional state, however, the control group also presented a high prevalence of these emotional states, demonstrating that the pandemic affected the entire population.

*Keywords:* anxiety, depression, myocardial infarction, COVID-19.

#### 1. INTRODUCTION

Patients with heart disease generally experience negative psychological states (Mal, Awan, Ram, & Shaukat, 2019). The acute myocardial infarction (MI), popularly known as heart attack, occurs due to thrombosis and sudden occlusion of a coronary artery due to atherosclerotic plaque rupture, fracture or erosion (Libby, 2001).

Despite the great medical advances in relation to the physical sequelae of post myocardial infarction (MI) patients, the sequelae psychological causes are still not fully recognized. MI causes a severe impact to the patient, significantly reducing the quality of life, increasing the subject's rehospitalization rate as well as their levels of stress and exhaustion (Kumar & Nayak, 2017). Increasingly, attention is being paid to mood disorders in patients recovering from acute myocardial infarction, especially since depression was first reported to be associated with increased mortality in this group of patients (Rosengren et al., 2004).

Depression is three times more common in patients after a myocardial infarction than those who have never suffered one (Thombs et al., 2006). A study reported that about 31% of patients in post-MI experience anxiety, with women presenting a higher incidence (Kumar & Nayak, 2017).

The World Health Organization (WHO) recognized the coronavirus disease (COVID-19) pandemic on March 11th, 2020 (Buss, Alcázar, & Galvão, 2020). In Brazil, the first confirmed case was in the state of São Paulo, on February 26th.

The COVID-19 pandemic has changed the reality of people's lives and will have long-lasting ramifications for the health of the population and the health system (Khera et al., 2020). The worsening of mental health has been documented worldwide in this period, with symptoms of post-traumatic stress, panic disorder, depression, anxiety, and self-perceived stress on the rise, even after adjustments for previous psychiatric illnesses and a history of childhood trauma, suggesting that the COVID-19 pandemic is having an independent effect on the mental health of the population (Rossi, et al., 2020).

Generally, in the event of a pandemic, people's physical health and the fight against the pathogenic agent are the primary focus of attention for managers and health professionals (Ferguson, et al., 2020). However, measures that may reduce the psychological impacts of the pandemic cannot be overlooked at this time (Wang, et al., 2020).

The present study aims to estimate the prevalence of anxiety and depression in patients suffering a myocardial infarction attended during the covid-19 pandemic at the Institute of Cardiology of Rio Grande do Sul, Brazil. This study compared clinical characteristics and risk factors between groups of infarcted patients with and without anxiety and depression symptoms. It also compared the prevalence of those psychological states within a sample of the general population.

## 2. BACKGROUND

The Interheart study (Rosengren et al., 2004), a large population-based case-control study on risk factors for acute myocardial infarction, had one of its "arms" in psychosocial risk factors. In an article published in the *Lancet* in 2004, which included 11,119 cases and 13,648 controls from 52 countries, the researchers demonstrated that both depression and stress are independent risk factors for acute coronary syndrome. This study was the first to demonstrate that permanent stress at home or at work doubles the chances of a heart attack (odds ratio = 2.17), while the presence of depressive feelings increases by 55% and the diagnosis of depression can increase the risk to 65%.

Owing to these results, people began to pay attention to psychosocial factors. Many studies have been published on the prevalence of these and other emotional states correlating with morbidity and mortality. Some prevalence studies before and during the pandemic in both infarcted and healthy patients are cited below.

Larsen, Christensen, Nielsen & Vestergaard (2014) showed a prevalence of 23.6% of anxiety and 18.6% of depression approximately 3 months after a myocardial infarction in a cohort of 896 people, evaluated with the HADS scale. They followed the participants for 3 years to check the occurrence of cardiovascular events and mortality. In models fully adjusted for traditional risk factors, anxiety was not an independent risk predictor, neither for mortality nor for events, and depression was a risk predictor for mortality.

Kala et al. (2016) conducted a year-follow-up with 79 postinfarction patients undergoing primary percutaneous coronary intervention. Patients were evaluated in the first 24 hours post-intervention, at discharge, and at 3, 6, and 12 months using the Beck

Depression Inventory (BECK-II) and the Self-rating Anxiety Scale (SAS). The prevalence of depression within 24 hours was higher on both scales, decreasing at discharge, gradually increasing up to 6 months, and then decreasing again. Depression in 24 hours decreased by 21.5% to 9.2% at hospital discharge and increased to 10.4%, 15.4%, and 13.8% at 3, 6, and 12 months, respectively. Anxiety followed the same trend, with a prevalence of 8.9% after the intervention and 4.5%, 10.8%, and 6.2% in the follow-ups.

Another study with patients undergoing primary percutaneous coronary intervention found a prevalence of depression of 19.7% and anxiety of 22.9% by HADS. This study aimed to assess the predictive value of these psychological characteristics in terms of 10-year mortality. Anxiety at baseline was associated with an increase in the 10-year mortality rate after PCI. Depression was also associated with a higher 10-year mortality; however, this association disappeared after further adjustment for anxiety. This finding was more pronounced in patients with stable angina than in those with acute coronary syndrome in which there was no association between depression or anxiety and 10-year mortality (de Jager et al., 2018).

We found a study from Singapore on health-related quality of life that evaluated 81 patients with cardiovascular disease in the period before and during the pandemic. Patients were evaluated with the EQ-5D, a generic health status instrument with five dimensions (mobility, self-care, usual activities, pain/discomfort, anxiety/depression). The authors demonstrated an increase in the anxiety and depression scores during the pandemic: from 12.5% pre-pandemic to 23.5 during pandemic. (Lim et al., 2020)

In contrast, mental health in healthy subjects was less studied before the pandemic. A WHO survey estimated that in 2015 about 3.6% of the global population had anxiety disorders and 4.4% depression.

In addition to this global survey, in healthy people, we found studies with varied samples, such as in the elderly (Yu et al., 2016) and graduate health sciences students (Hoying, Melnyk, Hutson, & Tam, 2020) just to illustrate. We can also cite a systematic review and meta-analysis of the prevalence of depression and depressive symptoms in different clinical departments. Overall, the prevalence of depression or depressive symptoms among outpatients was 27.0%. (Wang et al., 2017).

The COVID-19 pandemic caused by the new coronavirus (SARS-CoV-2) has been one of the greatest global health challenges of this century. Insufficient scientific knowledge about the new coronavirus, its high dissemination and mortality have generated uncertainties about what would be the best strategies to be used to fight it in different parts of the world. As we have already stated, in a pandemic context, people's physical health and combating the pathogen are the main focus of attention, as well as the development of vaccines and medicines. However, understanding the psychological impact on health cannot be ignored.

Never before has the population's mental health received so much emphasis. Psychological factors have been extensively studied around the world. Robb et al. (2020) conducted a registry of people over 50 who had consented to be contacted for research related to aging. A total of 7,127 men and women participated in the baseline survey and answered the HADS scale. They found a prevalence of 12.8% for anxiety and 12.3% for depression. Another study (Salari et al., 2020) showed higher values of 31.9% for anxiety and 33.7% for depression. The differences are justified by the study sample and the diversity of the instruments. The HADS scale seems to be the most widely used scale. To understand the influence of the pandemic on the prevalence of these psychosocial risk factors in patients with acute myocardial infarction, we conducted this study.

### 3. METHODS

#### 3.1. Participants

Case-control study with post-myocardial infarction patients, according to the V Guideline of the Brazilian Society of Cardiology for the treatment of acute myocardial infarction with ST-segment elevation (Sociedade Brasileira de Cardiologia, 2015). Exclusion Criteria: Previous documented history of dementia, cognitive difficulties, or psychiatric diagnosis. In the control group, surveys that were incomplete were excluded.

Post-myocardial infarction patients attending a Cardiology Hospital of South of Brazil were contacted between February and June 2020, via telephone calls, in order to explain the purpose of the present study. The interviews were carried out after the consent form was read to the patient and the patient consented to participate. All interviews were conducted by a psychologist. The patient sent an SMS message with the word "yes" to the researchers' phones, expressing their agreement to participate in the study.

The control group was evaluated between May and June 2021 using an electronic form built in REDCap® (Research Electronic Data Capture). Invitations were distributed by social media along with a link to access the form. Men and women with over 50 years and no cardiovascular disease were invited to participate. Inside the form there was a Consent Form to be accepted by the participant. Risk factors for cardiovascular disease were recorded. This study was approved by the institution's ethics committee.

#### 3.2. Instrument

The instrument used was the HADS (Hospital Anxiety and Depression Scale), a scale translated and validated by Botega, Bio, Zomignani, Garcia Jr. and Pereira (1995). The goal is to screen mild degrees of affective disorders in non-psychiatric environments and that is why it has been used in patients with organic illness. It consists of 14 multiple choice items, seven of which are aimed at assessing the anxiety (HADS-A) and seven for assessing depression (HADS-D). Each item can be scored from 0 to 3, reaching a maximum of 21 points in each subscale. Scores of 8 to 11 points denote possible and from 12 to 21 denote probable cases of anxiety or depression. In this study, the cut-off points assumed was a score equal to or greater than 8. The HADS was used in the electronic format and answered by the control group.

#### 3.3. Statistical analysis

The sample calculation was performed in the WINPEPI program, version 11.65, considering a power of 80% and a significance level of 5% and a proportion of 0.6 between the groups with and without depression. The data were based on the article by Thombs et al (2006) that showed several prevalences of depression in studies with the HADS scale. There is a variation of 11% to 17% in one study and, in another, 15.5% (CI-13 to 18%). So, considering a 0.6 ratio between depressed and non-depressed, 49 participants were required.

Patients were divided into groups with and without anxiety and depression according to the HADS scale. A control group was added for comparative analysis. Continuous variables were shown as mean and standard deviation and categorical variables using frequency. They were compared using the Student's t-test or Chi-square. The data were analyzed using SPSS software, version 26.0.

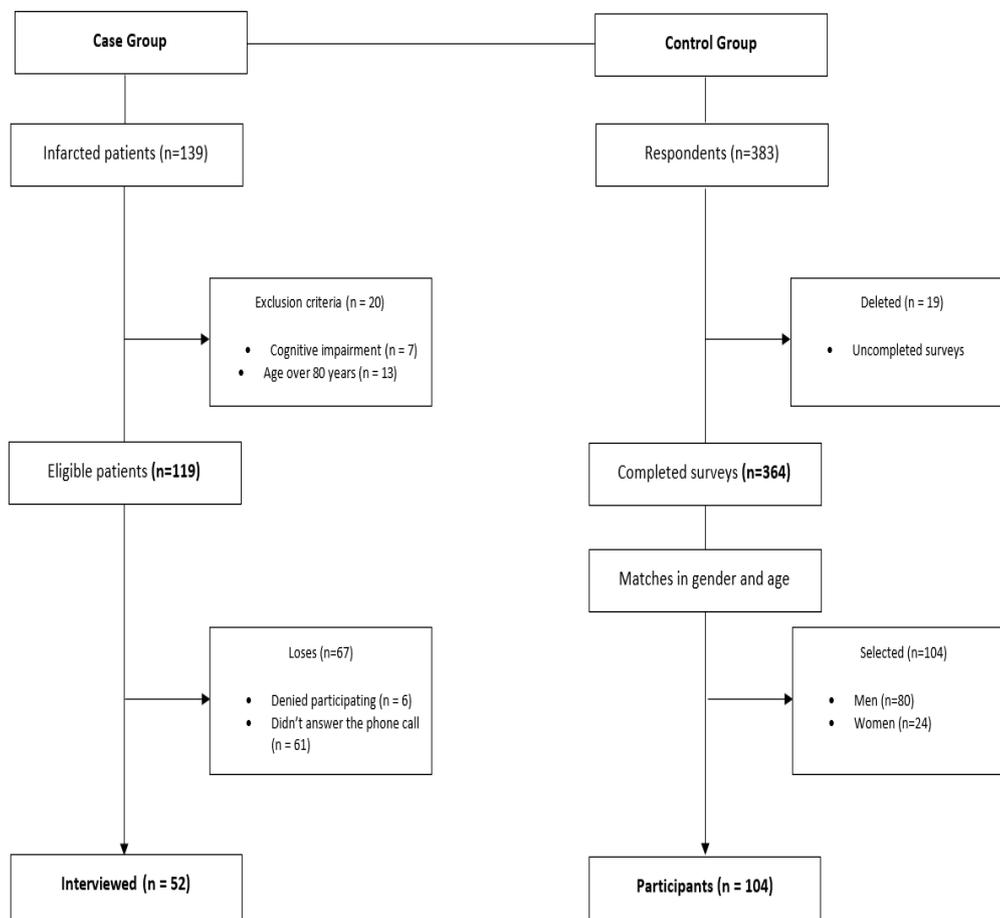
### 3.4. Ethical and legal considerations

This protocol is in accordance with the Helsinki declaration and was approved by the local ethics committee.

## 4. RESULTS AND FUTURE RESEARCH DIRECTIONS

In Figure 1 is shown a flowchart of the study, containing both groups.

*Figure 1:  
Study Flowchart.*

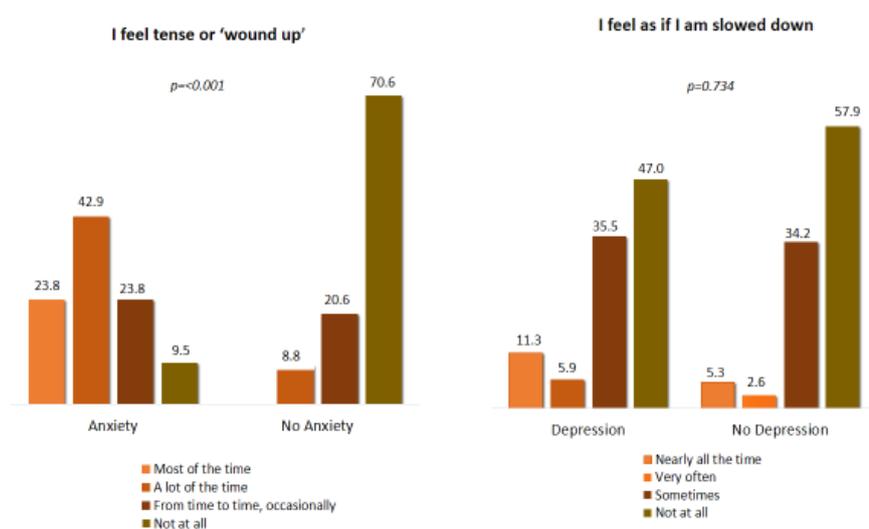


*Table 1.*  
*Anxiety and depression rates according to previous medical history in post-infarction patients.*

	Anxiety	No Anxiety	<i>p</i>	Depression	No Depression	<i>p</i>
Sex						
Male	36.60%	63.40%	0.677	29.30%	70.70%	0.652
Female	42.90%	57.10%	0.677	35.70%	64.30%	0.652
Risk Factors						
Smoking	42.90%	41.20%	0.948	41.20%	42.10%	0.304
Hypertension	47.10%	50.00%	0.389	47.10%	57.90%	0.456
Diabetes	33.30%	44.10%	0.428	41.20%	39.50%	0.905
Dyslipidemia	9.50%	29.40%	0.083	11.80%	26.30%	0.227
Premature Family History for CAD	19.00%	21.00%	0.890	18.00%	21.00%	0.770
Chronic Kidney Failure	9.50%	0.00%	<b>0.067</b>	5.90%	2.60%	0.552
Acetylsalicylic treatment	28.60%	9.10%	<b>0.061</b>	28.60%	16.20%	<b>0.061</b>
Three vessel disease	23.80%	15.60%	<b>0.088</b>	23.50%	16.70%	0.134

Regarding the HADS scale, it was observed that the patients suffering from anxiety felt tense and wound up for a significant period of time compared with those not suffering from anxiety (42.9% vs 8.8%) (Figure 2). Among those suffering from depression, the majority (58.9% vs 5.3%) felt pleasure occasionally while watching or listening to a TV or radio program or while reading something. All questions were statistically significant among participants with and without anxiety and depression, with the exception of one item on the depression scale which affirmed: "I feel as if I am slowed down" (Figure 2).

*Figure 2.*  
*HADS Scale response example.*



Regarding the control group (Figure 1) 19 forms were excluded for being incomplete. Of the 364 forms, we selected two controls for each case, matched for gender and age. Thus, of the 52 patients, 40 men and 12 women, we obtained 104 controls, 80 men and 24 women, with the same age range ( $56 \pm 11$  years,  $p = 659$ ). The control group had a low prevalence of cardiovascular risk factors (36% Hypertension, 7% diabetes, 11% Dyslipidemia and 12% Smoking).

In the control group, 31.7% of the participants presented anxiety, and 28.8% presented depression during the current COVID-19 pandemic. There was no statistically significant difference between the prevalence of anxiety and depression between post infarction patients and their controls. Comparing specifically to anxiety issues, we found a difference in relation to “I feel tense or wound up” where 23.1% of patients responded “occasionally” compared to 64.4% of the control group ( $p < 0.001$ ). Another statistically significant question was “Worrying thoughts go through my mind” in which 23.1% of cases responded “only occasionally” compared to 5.8% of the control group ( $p = 0.013$ ) (Figure 3). Finally, the question “I can sit at ease and feel relaxed”, the patients group answered 9,6% “not at all”, while the control group answered zero points ( $p = 0.009$ ).

In relation to depression, 25% of patients answered “sometimes” for “I feel cheerful”, while 51% of the control group answered the same thing ( $p = 0.002$ ). The patients didn’t lost interest in their appearance, as they take just as much care as before, while the control group seems more affected (63.5% vs 46.2%,  $p = 0.017$ ) (Figure 4). Finally, patients felt “slowed down” nearly all the time more often than the control group (53.8% vs 18.3%  $p < 0.001$ ).

Figure 3.  
Comparison of percentage of HADS-A scale responses between case and control groups.

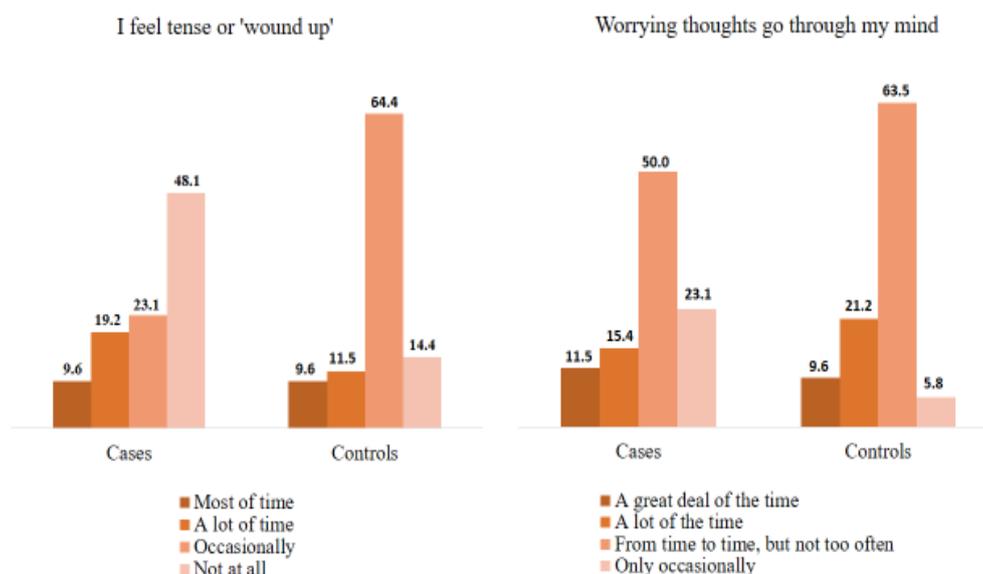
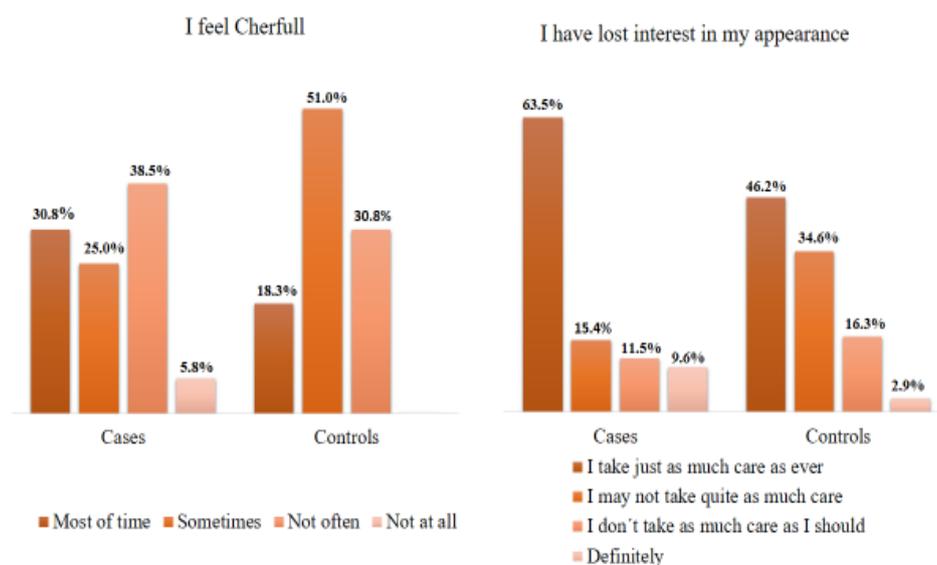


Figure 4.  
Comparison of percentage of HADS-D scale responses between case and control groups.



These data made it possible to establish psychological post infarction care routines at hospital, reducing the impact of psychological factors. Public measures of psychological assistance to the population must be taken too. On our part, for the controls ones, at the end of the questionnaire, the participants viewed a message of thanks for their participation, with a suggestion to take care of their mental health, looking for a professional they trust or through the suggestions of the researchers which were written, and we informed the contact numbers of psychology clinics linked to universities and public services.

## 5. DISCUSSION/CONCLUSION

In this study we found 36.5% of the infarcted patients displayed anxiety, and 28.8% displayed depression during the current COVID-19 pandemic. The study conducted by Kala et al (2016) in which he evaluated patients after the infarction episode, found three months after AMI, 10.4% had levels of depression and 4.5% of anxiety. In another study that measured the presence of anxiety and depression in infarcted patients using HADS, it was found that 23.3% of patients had anxiety and 18.6% depression (Larsen et al., 2014). Both studies displayed a lower prevalence of anxiety and depression than that was found in this study. It is possible that the knowledge among cardiovascular patients that they belong to the group at highest risk of complications for COVID-19 causes a constant state of alertness and anxiety. This hypothesis is supported by a nationally representative survey of an American study that found out that the prevalence of depression symptoms in the US increased more than 3-fold during the COVID-19 pandemic. Additionally, the authors emphasized that people with more exposure to stressors had greater odds of depression symptoms. (Ettman et al, 2020).

It was also possible to perceive a greater tendency towards anxiety in patients with chronic renal failure, three-vessel disease and those in continuous treatment with acetylsalicylic. The emotional state of patients with chronic diseases has been extensively studied (Lebel et al., 2020). Since they have to deal with the persistence and unpredictability of their illness, they often report feeling anxious and worried. With respect to depression, the levels of depression were higher in those who use acetylsalicylic acid, which may indicate chronic heart disease, as shown in the literature the association between depression and comorbidities (Carvalho et al., 2016). Similar results were reported by de Jager et al (2018) in which the majority of patients with depression were women, had a past history of infarction or cardiac surgery and diabetes.

As we found all the statistically significant issues among the participants with and without anxiety and depression, we can assume that the test is valid to dignify them from the cut-off point of 8, which proposes to classify the subjects with possible anxiety or depression. The screening process was adequate and provided sufficient suitable candidates. With reference to "I feel as if I am slowed down", this was not significant as it may be a common symptom in post-infarction patients, due to the fear of overexertion and suffering another infarction or some other complication.

The experience of acute myocardial infarction is often traumatic for the subject and may have sequelae in addition to the physical. The COVID-19 pandemic appears as yet another risk factor for mood disorders, as the population has seen their lives change completely from one day to the next: physical and social isolation, unemployment, constant fear of an unknown and potentially fatal virus. We found prevalences of anxiety and depression higher than those described in the literature for this population, which corroborates the hypothesis that the pandemic may be aggravating the emotional state of patients after a heart attack.

Despite all that was said about the infarcted patients and the pandemic, we have not been able to demonstrate a significant difference between them and the general population. Similarly, patients in the control group had similar levels of anxiety and depression. This may have been due to the pandemic, as in previous studies with the Brazilian population, such proportions contrasted with what is now reported. The general population rates showed an average of 13.6% for disorders anxiety-related and 4.4% for those related to depression (WHO, 2017).

The pandemic brought insecurity and fear to the population, especially to older adults (Ornell, Schuch, Sordi, & Kessler, 2020). The pandemic caused several stressful events, such as fear of contamination, hospitalization, death and loss of loved ones by COVID-19. Besides the aspects of the virus, it also brought relationship difficulties; changes in work routines; unemployment, financial, supply or housing problems (Mimoun, Ari, & Margalit, 2020; Rossi et al., 2020). In addition, long-term social isolation caused frustration, boredom, loneliness, and the lack of adequate information from public health authorities were also documented as stressful events (Brooks, et al., 2020)

In a systematic review with meta-analysis, about the stress, anxiety and depression in the general population during the period of the pandemic, it was revealed that the prevalence of anxiety in 17 studies in a sample of 63,439 people was 31.9% and the prevalence of depression in 14 studies totaling a sample of 44,531 was 33.7% (Salari et al., 2020).

The CHARIOT COVID-19 Rapid Response Study was designed to investigate the impact of COVID-19 and associated social isolation on mental and physical wellbeing in individuals aged 50 years and over. This study investigated changes on the 14 components of the Hospital Anxiety Depression scale (HADS) after lockdown was introduced in the London, United Kingdom. The authors found that a total of 12.8% of participants reported

feeling worse on the depression components of HADS (7.8% men and 17.3% women) and 12.3% reported feeling worse on the anxiety components (7.8% men and 16.5% women). (Robb et al., 2020).

In the “ConVid Behavior Research” a cross-sectional study with 45,161 adult Brazilians, 53.6% female and the majority young (45.7% between 18 and 39 years old), revealed that 52.6% frequently felt anxious or nervous, 40.4% felt sad or depressed, with higher prevalence in women compared to men. (Barros et al, 2020). This increased in Brazilian rates in relation to the others due to the study’s sample, predominantly of younger and women, which were more affected by anxiety and depression. It was known that women tend to suffer more from anxiety and depression when compared to men (Thombs et al., 2006). Similarly, in the London study, female younger participants, who were single/widowed/divorced, reported poor sleep, feelings of loneliness and the ones who reported living alone were more likely to indicate feeling worse on both the depression and/or anxiety components of the HADS. There was a significant negative association between subjective loneliness and worsened components of both depression and anxiety. (Robb et al., 2020).

In relation to young people, we can consider the hypothesis that they may have suffered more directly the economic impacts of the pandemic, with temporary or permanent loss of employment (Mimoun et al., 2020). The interruption of professional activity in the pandemic has been reported as a factor that can generate loss of confidence, self-esteem, and control, especially when the person perceives himself as a burden on society and feels a lack of belonging that contributes to emotional suffering (Brooks et al., 2020). The COVID-19 pandemic has increased the situation of vulnerability of the Brazilian population, with high rates of unemployment and reduced income (Werneck & Carvalho, 2020)

This study has some limitations, such as: 1) Interviews with patients were conducted over the phone and not in person. Due to the pandemic, the circulation of researchers in the hospital was suspended. 2) Although we performed age-sex matching in order to make the groups more comparable and minimize distortions, other uncontrolled confounding factors may be related to anxiety and depression both among patients and in the community sample. 3) Still, although we requested that only participants over 50 years of age and without cardiovascular disease complete the questionnaire, there may have been information bias since no method was used to prove the absence of the disease, we only assessed the prevalence of risk factors.

The prevalence of anxiety and depression found in the sample of post-infarction patients were higher than described in the literature, which corroborates the hypothesis that the pandemic may be aggravating the patient's emotional state. These results made it possible to establish post-infarction psychological care routines at hospital, reducing the impact of these psychological factors on health. This study indicate that MI patients should have been taking psychological support whether pandemic or not. However, the control group also presented a high prevalence of these emotional states, demonstrating that the pandemic affected the entire population. Mental health care of the population needs to be established.

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## Chapter #22

### TECHNOLOGY AND ITS USE IN FAMILIES WITH CHILDREN

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#### ABSTRACT

Both societal progress and the evolution of information and communication technology (ICT) offer communication opportunities and advantages, as well as challenges at various levels. The literature has documented that the increasing presence of technology in family contexts has made it a central element in the management of routines. It should also be noted that, in family, technology can take on some functions, such as carrying out independent activities as a device, or it can serve as a mechanism for socialization and communication. Using a single question, we carried out a qualitative analysis about people's perception about the use of information and communication technology as a babysitter. Twenty-eight subjects of both sexes participated in the study, ranging from adolescents to young adults without children, to fathers and mothers, all aged between 14 and 60 years of age. Content analysis revealed that parents use technology as a babysitter due, mainly, to their demanding professional lives as well as in consequence of the usefulness of the tool to family organization. Participants were also found to perceive a need for alternatives.

*Keywords:* routine management, family interaction, children, technology, babysitter.

#### 1. INTRODUCTION

The family system has evolved over time, in particular regarding its structure, dynamics and constitution, while also adapting to the social, economic and geographic changes which it is subject to (Sallés & Ger, 2011). Sociology and psychology see the family to be the first and foremost agent of socialization, as it lies at the foundation of personality development and child growth (Macionis, 2011 as quoted in Villegas, 2012). It has the most lasting influence, when compared to others such as school, peer groups, and, most recently, technology (Abela, 2003).

Information and communication technology is a human invention that can enrich interpersonal relations or simply provide pleasure for those who use it. Nowadays, technology (e.g., television, smartphones, iPads, tablets, video games, Playstations and computers (Edgar & Edgar, 2008)) is seen as both intrinsic and indispensable (Church, Weight, Berry, & MacDonald, 2010). It is mostly used for information and entertainment purposes, and its users devote a significant amount of time to it (Abela, 2003). Very few homes, these days, lack any forms of technology (Stephens, 2007) and references are often heard to "digital families" since several types of devices are commonly used. Technology is inevitable in homes and the notion of a world made up of only parents and children has vanished (Díazgranados, 2007). In addition to its natural and attractive nature, technology is becoming more and more pervasive in daily routines. For example, it can be used to coordinate or arrange the family member schedules (e.g., to perform a domestic activity

while watching television). It can also be used simultaneously with other tasks (e.g., doing sports while listening to music on the MP3 player or smartphone) (Church et al., 2010). Most of all, technology has become a family companion (Díazgranados, 2007).

Over the course of time, the family as a system has been undergoing transformations in its structure and dynamics as a result of: i) a decrease in parents' availability to perform their parental role due to the rise in professional demands and challenges; ii) the rising numbers of single parent families; iii) the diminishing availability of the nuclear (e.g., parents, siblings) and extended families to contribute to care of small children; and, iv) the continuing responsibility of parents to carry out domestic tasks (e.g., shopping, taking care of children's hygiene, cooking, and cleaning, etc.) without any kind of assistance (Beech et al., 2004).

Meanwhile, there has been the intrusion into the family of myriad new forms of technology and, according to Sanchis (2008), these have expanded their roles beyond those originally intended. Television, for example, is seen to be a "family member". It has expanded its role from providing entertainment to taking care of children. The image of a child sitting alone in front of a television is quite common. Moreover, we can all attest to instances where the television is the main occupation throughout, such as, for example, when a child stays home sick from school. Sanchis (2008) sees television as being one of the first devices that prepared children to adapt to other screens (e.g., consoles, smartphones, computer, tablet) which have come to assume a similarly preponderant role in young people's development.

If, due to the fact that families are increasingly busy, children do not always have someone to watch over them, then technology becomes their only companion (Edgar & Edgar, 2008) and, simultaneously, their babysitter. This is a solution that has increasingly been responding to parents' daily needs. Special attention has been given to the so-called "second screens" (e.g., smartphones, tablets) (Ley et al., 2013) but, for Götz, Bachmann and Hofmann (2007), television seems to be the favorite technology of children in their free time. It serves as an inexpensive babysitter and can therefore be used "take care of children" while parents attend to other responsibilities. Abela (2003) states that television is considered an "electronic babysitter" and can even be called the "third parent" since it exerts a lever of authority almost comparable to that of parents. However, although these authors have emphasized the child's preference for television, Dias and Brito (2016) disagree and state that, these days, children's current favorite forms of technology are tablets and smartphones.

Given the degree of penetration of technology in homes, it is impossible not to feel affected by it, especially children, who are more exposed to its influence from a young age (Díazgranados, 2007). Childhood is a life cycle characterized by intense levels of interaction and assimilation of significant stimuli. Meanwhile, today's children grow and develop in constant contact with technology, which affects them a wide range of areas (e.g., cognitive, social, affective, physical) (Correa et al., 2015).

Authors such as Vandewater, Lee, and Shim (2005) consider that children's first contact with technology occurs naturally as part of the family environment. The literature is replete with examples of direct contact and constant use of technology by children. Buckingham (2000, quoted in Plowman, McPake, & Stephen, 2008) argues that childhood has been lost as a result of the changes in modern society. Postman (1982, 1994 as quoted in Plowman et al. 2008), in turn, blames technology for the loss of childhood, as most children seem to prefer to spend their leisure time with screen related activities rather than those which require the physical presence of other people. Others, such as Plamer (2006, as quoted in Plowman, et al., 2008) point out that children's language development is at stake

since they spend so much time watching television, where communication is passive, which undermines their active or productive language, since they do not talk enough with each other. On the other hand, it has also been argued, for example by Stephens (2007), that technology has a positive impact on children. The author argues that computer programs or games with valuable content and quality help children, as users, to positively develop both intellectual and social abilities. Moreover, technology can be both stimulating and relaxing for children. It is also defended that technology can be a way of sharing interests with peers or learning new facts or information (Stephens, 2007). Chaudron (2015) further states that contact with technology may lead children to stimulate their imagination, fantasy, creativity, and gaming. Devices can also serve as a certain support for learning, reading, and researching information.

In modern families, technology takes on different roles. A new usage, however, is proving especially helpful for parents: technology can function as a babysitter of small children. There are justifications for this situation, namely: (i) parents are more and more professionally active and therefore have less time to spend with their children; (ii) single parent households have been increasing in number; (iii) there are fewer siblings or neighbors that might take care of children (Edgar & Edgar, 2008); and, (iv) technology is an inexpensive way of keeping children quiet while parents perform other tasks (Götz et al., 2007; Rideout, Hamel, & Kaiser Family Foundation, 2006). By the same token, technology can also function as: a support for education; a tool for helping children to sleep; a family activity; background noise; or as a way to stimulate or relax from physical activity (Götz et al., 2007).

Technology has become a companion for children during several hours each day (Edgar & Edgar, 2008), as parents are getting busier day by day. Heinrich (2014) found that participant families did not have any assistance with home responsibilities, whether on a daily or weekly basis. Moreover, it was found that one of the parents, usually the mother, held the responsibility for most family responsibilities.

Considering the present reality and existing literature, this investigation looked at adults and teenagers living in the *Alentejo* region of Portugal and analyzed their insights into the use of technology as a babysitter of small children.

## **2. METHOD**

### **2.1. Participants**

The study was conducted with the participation of (N=28) adults, young adults and teenagers, of both genders, between 14 to 60 years of age. All participants admitted to having some familiarity with technology. Regarding their educational levels, the teenagers were attending (N=2) the 3rd cycle of the basic education and (N=5) high school; only one young adult (N=1) had a vocational degree and the others (N=6) had college degrees. Two fathers (N=2) had college degrees, three (N=3) had completed the 3rd cycle of the basic education and (N=2) had vocational degrees. Two mothers, (N=2) had completed the 3rd cycle of the basic education, two (N=2) had completed high school, and three (N=3) had college degrees.

### **2.2. Objective**

Identify the participants' perception of parents use technology as babysitter.

### **2.3. Procedures**

A qualitative data collection procedure was used in which a single question was posed:

“What is your opinion about the following statement: ‘Parents use technology as babysitter for small children’”.

The following criteria guided participant selection: participants had to be either a father, a mother, or a young adult or teenager without children of their own.

After obtaining the authorizations and informed consents from the participants, the interviews were conducted, recorded, and later transcribed and coded, in order to guarantee participant anonymity. Data were analyzed using an inductive Content Analysis technique that yielded *à posteriori* categories (Moraes, 1999).

Two types of units were set. The registry units (RU) are categories of keywords or expressions in participants’ speech; counting units (CU) identify the number of times each participant mentioned a certain experience. When the number of (RU) and (CU) is the same, the number of (RU) is not mentioned.

The data were collected by interview and then coded in order to guarantee the anonymity of the participants – each participant was given a code starting with a letter, F for fathers, M for mothers, YA for young adults, and T for teenagers.

### 3. RESULTS

The results of the content analysis appear below. It was evident that all participants (N=28) were aware of families using technology to babysit small children and even provided some explanations. From the records under analysis concerning the question: "Parents make use of technology to babysit small children (0-10 years)", three categories and subsequent subcategories emerged: 1) the importance of technology as a babysitter (using technology to take care of children while parents are away); 2) implications of technology as a babysitter (effects or outcomes, either beneficial or harmful, of using technology as a babysitter); and 3) the need for alternatives (due to the risk of harmful impacts on the process of children’s development of their knowledge and abilities) and their respective subcategories.

#### 3.1. Category 1: The importance of technology as a babysitter

This category gathers participants’ insights regarding the role of technology as a babysitter. It includes three subcategories: “Calming children down”, “Entertaining children”, and “Guaranteeing children's safety”.

The participants saw that technology enables families to calm their children down, entertain them, and keep them safe. Eight participants (CU=8) mentioned the role of technology in calming children, as exemplified by the following quotes: "The kid is restless, so we give him television and cartoons" F4; "Children are in the supermarket and making a scene and the father gives them the smartphone and the child calms down" T10; "Tablets and all those things, in order to calm the kids down and calm themselves down " YA18; "It's the best way for parents to be able to do some domestic chores, 'calm kids down'" M14 and "It is a cheap and safe way to ensure children behave well and with little effort" M12.

Thirteen participants (CU=13) mentioned the role of technology in “Entertaining children”, of which we highlight: "Keeping the children busy because there is always so many things to do" F3; We don't need to entertain them, to play with them because on the Internet they are where they want to be. Nobody bothers them" M2; and, "They contact a call-center when the Panda channel is inactive, asking it will be back online, because they have to entertain the kids" YA16.

Three participants (CU=3) mentioned “Keeping children safe” as the following quote attests: "It’s a safe way safe, first of all, in the sense that children are not outside, and therefore exposed to other kinds of threats and therefore, it’s a safe way for children to spend their time" YA14.

### 3.2. Category 2: Implications of technology as a babysitter

This category brings together participant insights on using technology as a babysitter. It is divided into two subcategories: risk (CU=28) and usefulness (CU=7).

Table 1 - Category 2: Implications of technology as a babysitter exemplifies participants’ view that using technology as a babysitter entails both risks and benefits for users.

*Table 1.  
Subcategory Risk*

<b>Sub-Subcategories</b>	<b>RU=CU</b>
Weakening of family bonds	17
Exposure	4
Safety	1
Alienation	2
Reduced development of social and communication abilities	12
Isolation	12
Addiction	7
Health	2
Shallowness (preference for quantity over quality)	2
Alienation from reality	6
Mimicking of behavior	2
Access to improper content	1
Negative impact on education	7

The subcategory “Risk” arises from the comments of all participants (CU=28) and includes 13 sub-subcategories of risk ranging from weakening of family bonds, exposure, reduced development of social and communication abilities, isolation, addiction, alienation from reality, negative impact on education, among others, as described in Table 1. The following quotes serve as examples: "You lose a little bit of reality of the human side, of the human relations between parents, children, between siblings and then, with friends" F1; "They become lonely people. They experience problems by themselves, don't speak with anybody, don't unburden themselves. This can create lead to very complex situations" M19; "They start living in that digital world" YA16; and, "If the child stays completely connected to the internet can even create an addiction" T2; and "They don't care about what their parents say and, as they grow up, they start being...the parents can't control them" YA15.

In the Usefulness subcategory we have chosen to emphasize the insights of seven participants (CU=7) regarding the issue of whether the use of technology as a babysitter can be useful for developing children’s skills and deepening their knowledge. The following quotes serve as examples: "They also need to have that technological side developed more and more" M9; "On those apps there are also didactic games (...)there are games to stimulate the child"; and, "Kids can even develop all that ability and agility to handle that equipment" YA 16.

### 3.3. Category 3: The need for alternatives

This category gathers participant opinions about the need for alternatives to using technology as a babysitter. Category 3: Need for Alternative presents comments of 18 participants (CU=18) about the need to find alternatives. Examples include: "You can entertain them, give them pencils, some paper and they can draw. They keep themselves occupied (...) and then there are games, dominos, Lego. That is far more interesting" M14; "I think that maybe there are other options to amuse kids, talk to them, even if they are of a tender age. Kids need a lot of attention. I think that it would be much easier to entertain them by other means" F4; "When you get home, to turn the television off more often, to turn the computer off more often, to turn off computer games more often, tablets, whatever, and pay more attention to children" YA12; and, "Instead of giving a tablet to children, give them a soccer ball, I think it is much more important for him to fall and get injured than to be with the finger on the screen all the time" T13.

## 4. DISCUSSION

Our participants believe that parents are regularly using technology to babysit their small children (e.g. "First of all, it is almost a fact that it's used, but specifically in our family we used it; I won't hide from you the fact that that, for parents, especially at the end of a busy day, it's a balm") This statement fits into Category 1 that unites opinions that using technology as a babysitter is useful for calming, entertaining, and keeping children safe. Chaudron (2015) states that, the more overwhelmed they are with responsibilities, the more important it is for parents to have a moment of rest ("parents don't have time for their children and the little that there is left (...) they prefer to spend it on themselves and rest") and time for tackling domestic tasks ("to get children occupied because there are always so many things to do").

Edgar and Edgar (2008) argue that technology is beneficial, since it allows parents to control and regulate both the content and the amount of time spent in front of the television, computer, tablet and other devices, giving a calm sense of supervision. Moreover, it is not only at home that parents use technology as a babysitter. Chaudron (2015) describes how parents also use smartphones (due to their portability) as a primary emergency resource to keep children entertained while out, for example, at a restaurant or while waiting in a line ("when we are out, they stay entertained"). Surprisingly, in this same research, it was found that mothers are more permissive when it comes to providing technology to children (Chaudron, 2015), maybe because they are the most overwhelmed with responsibility ("it is an inexpensive way to get children to behave well"). It is argued that many parents see the tablet as a "friend" of their child, with whom they spend most of their time (Chaudron, 2015), thereby, becoming a fundamental part of family life.

Another relevant finding deals with participant opinions regarding the risks and convenience of using technology as a babysitter. Potential risks (Table 1) include the regular and excessive exposure of the child to screens during a significant amount of time. Multiple studies (Edgar & Edgar, 2008; Tandon, Zhou, Lozano, & Christakis, 2011) have raised awareness of the amount of time small children spend with devices with screens, reporting periods between 3.2 to 5.6 hours per day. This degree of exposure has been related to childhood obesity (Dennison & Edmunds, 2008) ("children end up doing less physical exercise"), sleep disorders (Thompson & Christakis, 2005), and attention deficit disorders (Zimmerman & Christakis, 2007). The risks most commonly mentioned by our participants were the weakening of family bonds, decreases in social and communication abilities, and isolation. Correa et al. (2015) call attention to a loss of contact and

coexistence of children with their family and friends. They point to the risk that children begin to focus exclusively on a virtual world ("children do not interact so much with each other, do not develop friendships so much"). This virtual world can lead to an alienation from reality, making it harder for children to distinguish what is real from what is not ("You lose a little bit the reality of the human side, of the human relations between parents and children (...) and sometimes they only live virtually"). Children may become more and more isolated ("they end up being isolated and not only from other children, but also from their parents"), sedentary, passive and lacking in creativity, curiosity and without any interest in reading or experience. However, not all the authors agree with this conclusion, Plowman et al. (2010) argue that children prefer activities without technology, such as playing outside, swimming, or going to a park.

Participants also worried about the potential negative impacts of technology on parental control ("They don't care about what their parents say and, as they grow up, they start being...the parents can't control them, and they get very rude; that has to do with the parents own education and the time they devote to stay with their children"). The effect of using technology as a babysitter will depend on how parents see it and use it. Plowman et al. (2010) state that, if parents use technology often, they will be more likely to use it as a babysitter of their children. These parents consider that frequent contact with technology from a young age promotes child development in the technological field, giving them necessary skills.

However, if, during children's upbringing, parents allow unsupervised and unregulated use of technology, those risks mentioned above can arise and negatively affect children's development and relationships with others. Therefore, parents must play a mediating role between children and technology. Abela (2003), defining and controlling children's use and contents in a healthy fashion. Some of our participants raised concerns about children gaining access to age-inappropriate content and the possibility they might mimic behaviors they see. Stephens (2007) warns of the danger that children might assimilate content containing stereotypes, negative perceptions and violent behaviors, ("trying to do what they see in the movies, acting violently towards others"). The same author asserts that the more time a child spends watching television, the greater the probability of reproducing the behaviors and language that has been seen and listened to. Nowadays, for those who have cable television, there is a great assortment of children's content. Some people, however, are still limited to publicly accessible channels, only one of which in Portugal broadcasts children's content for a target audience up to 6 years of age and during limited periods (Sanchis, 2008). Consequently, these children have a much greater exposure to age-inappropriate programming, leading to an assimilation of information they should have access to only later in life.

Participants also worried about the potential for children to become addicted to technology as a result of their caretakers using it as a babysitter ("I don't think that it is positive for the future of the new generations in which the kids are so addicted on these devices; the problem is that it creates an addiction...they get addicted; they get addicted, they don't listen to anything else"). Felt and Robb (2016) point out the danger of children forming dysfunctional attachments to technology, such as internet addiction and gaming disorders. Users that enter into these unhealthy behaviors relative to technology and devices can be characterized as compulsive, obsessive or less healthy ("If he sees the smartphone, he wants the smartphone, soon as he sees the tablet, he wants the tablet (...) that is wrong because it is making them to get addicted to technology").

However, technology is useful in family life. Participants also commented on its usefulness. For example, some mentioned its ability to help young people develop skills

and deepen their knowledge. Stephens (2007) argues that technology provides valuable content and quality that are important in helping children to positively learn both social and intellectual abilities ("on those applications there are also didactic games (...) to stimulate children"). Devices can also contribute to sharing some interests among peers or even to learning new information. Edgar and Edgar (2008) affirm that, as a babysitter: i) television can serve as a "storyteller", stimulating children's imagination and opening up myriad opportunities for learning and development, while promoting reflection about emotions, anguish, hopes and issues associated with certain age groups; ii) computer or console games can teach cause-effect relations, results based on intuition, the merit of persistence and how to develop interactive strategies (e.g., searching for information on multiple sources, decision-making and awareness of the consequences, multi-tasking parallel processing and cooperation with others through a network); iii) the computer allows children to stay continually focused, to develop cognitive abilities through games, to develop perception and discrimination, notions of sequences and relations between objects and to train perceptions of concepts such as space, size and shape. In summary, they argue, technology provides visual, verbal, emotional, social, and even physical ways of dealing with the world (Edgar & Edgar, 2008).

The participants' perception about the need for alternatives to technology ("You can give them pencils, some papers and they paint, they get themselves occupied (...) and then some games, domino, Lego, it is much more interesting; When you get home, to turn off the television more often, to turn off the computer more often, to turn off computer games more often, tablet, whatever, and pay more attention to children"). Dorey et al. (2009) point out that a lot of parents find it hard to come up with safe and accessible alternatives for children to replace technology. Such parents see watching television, for example, to be safer than outdoor activities. Chaudron (2015) reported parents who wished their children would experience more physical outdoor activities, preferably with other children. Stephens (2008) also points out the need for alternatives to screens, namely family social activities (e.g., card games, reading, telling jokes or stories, playing with didactic toys, puzzles or even puppets). Although technology will continue to present risks for children and their development at different ages, it will undoubtedly continue to be present in their routines. It will be a permanent presence in users' personal and academic/professional lives, intrinsic to and indispensable for a wide gamut of activities.

It is important for parents to be alert and supervise children's use of technology in order to mitigate the associated risks. Abela (2003) suggests a possible solution to this great family challenge would require parents and children to maintain constant communication, within a system of mutual trust, where parents might be aware of their children's lives. This approach will enable parents to help children find a balance between healthy and excessive uses of technology.

## **5. CONCLUSION**

The present research allows us to recognize the frequent use of technology as a babysitter of small children that arises from parents' busy schedules and demanding professional lives. It also highlights how, for those who are responsible for small children, this practice simultaneously brings both risks and benefits, as it is a useful tool that supports family management. No reference to children with complex needs was noticed. It would be interesting to verify its relationship with the subject under study. However, despite its usefulness, it lacks the human dimension of affection and comfort and the help to deal with a more complicated situation. Because even though they are entertained with technologies,

risky situations can occur, which is why their supervision is important. Human presence will always be important.

Children behavior is shaped by family and parenting practices, in this sense, their interests and the use of technologies will have the influence of their family environment. In this sense healthy and active alternatives must be found so that children can make appropriate use of technology while also enjoying other kinds of activities.

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## Chapter #23

### LIVING WITH A CHRONIC DISORDER: THE BENEFITS OF MINDFULNESS AND PSYCHOLOGICAL FLEXIBILITY

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#### ABSTRACT

Functional somatic symptom disorders (FSSD) and well-defined autoimmune disorders (AD) are common and have detrimental effects on physical and psychological wellness. Psychological flexibility involves a mindful focus on the present and the prioritization of thoughts, emotions, and behaviours that align with individual values and goals. Increased psychological flexibility is associated with better physical and psychological wellness and, thus, the purpose of the current study was to examine associations between mindfulness, psychological flexibility, and overall wellness. In this study, individuals with FSSDs (fibromyalgia, chronic fatigue syndrome) were compared to those with ADs (multiple sclerosis, rheumatoid arthritis) to determine how psychosocial factors affect wellness. In total, 642 participants completed an online questionnaire package to assess physical health, psychological wellness, and distress (anxiety, depression), psychological flexibility, and mindfulness. Results indicated that individuals with a FSSD reported greater severity of physical and psychological distress. Correlational analyses indicated that aspects of mindfulness and psychological flexibility were associated with greater wellness. Regression analysis indicated that focusing on personal values predicted greater life satisfaction.

*Keywords:* functional somatic symptom disorder, autoimmune disorder, psychological well-being, physical health mindfulness, psychological flexibility.

#### 1. INTRODUCTION

For individuals facing incurable chronic illnesses, obtaining the highest possible quality of life is essential and depends upon physical and psychological wellness as well as optimal social functioning (McCabe & McKern, 2002). It is important to educate patients to help them learn and adopt effective coping strategies and improve access to physical and psychological support. Functional somatic symptom disorders (FSSD) are characterized by lasting bodily complaints, such as pain and fatigue, that do not have a pathological explanation (Henningsen, Zipfel, & Herzog, 2007). Although diagnosis is based on a process of symptom elimination (Henningsen et al., 2007), clear diagnostic criteria have been developed for the three most well-defined FSSD illnesses: fibromyalgia syndrome (FMS), chronic fatigue syndrome (CFS), and irritable bowel syndrome (IBS; Henningsen et al., 2007). CFS is categorized by persistent or relapsing debilitating chronic fatigue and other non-specific symptoms (e. g., muscle weakness, pain, cognitive deficits) that have no other underlying cause. FMS is characterized by chronic widespread pain (Wolfe et al., 2010); fatigue, cognitive impairments, headaches, abdominal pain or cramps, and depression are non-specific symptoms (Wolfe, Egloff, & Häuser, 2016). Given the wide variety of symptoms and lack of diagnostic tests, diagnosis of FSSDs is difficult and can result in patient frustration.

Although similar symptoms are associated with well-defined autoimmune diseases (AD), such as multiple sclerosis (MS) and rheumatoid arthritis (RA), clear medical tests support diagnosis. MS is an autoimmune disease characterized by chronic inflammation due to the immune system attacking the myelin sheaths of central nervous system axons (Compston & Coles, 2002), which causes lesions that can affect all central nervous system functions (Mohr & Cox, 2001). Although symptoms vary greatly, vision problems, loss of function and feeling in limbs, bladder and bowel incontinence, pain, and loss of balance are common (Jellinger, 1999). Rheumatoid arthritis (RA) is a chronic inflammatory joint disease caused by infiltration of joints by T cells, B cells, and monocytes, destroying cartilage and bone leading to inflammation and damage (Aletaha & Smolen, 2018). Symptoms include pain and swelling and misaligned joints (Sokka, Kautiainen, Möttönen, & Hannonen, 1999). Manifestations outside of joints can occur including rheumatoid nodules (firm subcutaneous lumps near bony prominences) and rheumatoid vasculitis (necrotizing inflammation of arteries; Aletaha & Smolen, 2018). Individuals who have symptoms of MS or RA are typically referred for medical tests, with diagnosis occurring soon after test results are available.

### **1.1. Modifiable factors targeting physical and psychological wellness**

Assessments of physical wellness can include items that allow individuals to self-report their levels of pain, tiredness, nausea, fatigue, shortness of breath, and appetite, whereas assessments of psychological symptoms include items measuring levels of depression, anxiety, and overall well-being (Chang, Hwang, & Feuerman, 2000). Measuring physical health can include an assessment physical and emotional functioning and well-being, social contact, fatigue, pain, and perceptions about overall health (Hays & Morales, 2001). Subjective health-related quality of life can be assessed using self-report questionnaires, such as the Edmonton Symptom Assessment Scale (Chang et al., 2000) and RAND-36-item health survey (Vander Zee, Sanderman, Heyink, & de Haes, 1996). Generally, these self-report inventories are strongly associated with objective clinical measures of physical wellness (McCabe & McKern, 2002).

Satisfaction with life is a component of overall subjective well-being (Diener, Emmons, Larsen, & Griffin, 1985) that combines cognitive factors, in which life circumstances are assessed, and emotional factors, in which negative emotionality are assessed (Tay et al, 2015). Measures of satisfaction with life focus on the personal experience of being happy by assessing perceptions about one's life (Tay et al., 2015). Psychological well-being plays a role in a person's ability to maintain good physical health (Hays & Morales, 2001). Mental health problems (e.g., anxiety, depression) are often measured by researchers to establish if experienced psychological symptoms are associated with specific medical conditions and symptoms from these illnesses (e.g., fatigue and chronic pain).

One of the main goals of Cognitive Behavioral Therapy (CBT) is to decrease pain and distress and increase both social and physical functioning (Turk, Meichenbaum, & Genest, 1983). One CBT model is Acceptance and Commitment Therapy (ACT; Hayes, Luoma, Bond, Masuda, & Lillis, 2016). The goal of ACT is to increase psychological flexibility (Hayes et al., 2016), which is a person's ability to detect and acknowledge interfering thoughts, emotions, and physical sensations without acting on them (Wicksell et al., 2012). Psychological flexibility facilitates appropriate behaviours that are aligned with personal values and long term-goals (Wicksell et al., 2012).

The core processes underlying psychological flexibility include defusion, experiential avoidance and acceptance, contacting the present moment, self-as-context, values, and committed action (Manlick, Cochran, & Coon., 2013). Defusion refers to dissociating the individual from their internal thoughts and focuses on how a person's thoughts influence their behaviour (Hayes et al., 2016). Experiential avoidance and acceptance involve accepting one's internal experiences as part of the human experience, rather than trying to control them (Manlick et al., 2013). Contacting the present moment is described as complete awareness of the present moment, unlikely to be attained by individuals constantly fused with their thoughts and unaccepting of their inner experience. This process enables the individual to focus on appreciating themselves by discovering other valuable attributes. Self-as-context refers to perceiving oneself beyond the object of our inner experiences. Values are based according to the individual's personal needs and desires. Finally, committed action is described as actively choosing behaviours that would enhance one's life based on their values. Unlike in CBT, the ACT process is not focused on eliminating or changing negative thoughts; instead, an individual may have persistent negative thoughts and yet be able to interact flexibly with both positive and negative inner experiences to live a life that is in line with their core values (Kashdan & Rottenberg, 2010). This value-based action is beneficial to individuals living with chronic conditions such as pain (Wicksell, Ahlqvist, Bring, Melin, & Olsson, 2008).

Mindfulness is a component of psychological flexibility (Ramaci, Bellini, Presti, & Santisi, 2019), and is a personal process that involves a focus on the present moment (Drouman, Golub, Oganessian, & Read, 2018) that is accomplished by noticing surroundings, thoughts, feelings, and events, being nonreactive, being non-judgemental, and self-accepting (Drouman et al., 2018). It is both a regulated and maintained attention to existing sensory, emotional, and cognitive events that are changeable and transient, without allowing emotions to cloud judgement (Zeidan, Grant, Brown, McHaffie, & Coghill, 2012). Further, it can be developed by mental training, such as meditation, which changes how a person evaluates sensory events (Zeidan et al., 2012). Although research indicates positive associations between mindfulness and psychological flexibility, Masuda and Tully (2012) found that these constructs contribute uniquely to measures of psychological distress. Thus, it is important to consider the unique role of mindfulness and psychological flexibility in wellness.

Both mindfulness and psychological flexibility are associated with increased wellness. The strong positive relationship between mindfulness and satisfaction with life has been well-established (Kong, Wang, & Zhao, 2014). Geiger et al. (2016) found that mindfulness-based interventions improved multiple aspects of psychological wellbeing including anxiety, depression, stress, and pain acceptance. Mindfulness can improve pain management associated with chronic pain and reduce stress-related outcomes and disease in chronic illness populations (Creswell, Lindsay, Villalba, & Chin, 2019). After undergoing ACT, Wicksell and colleagues (2012) found improvements in self-efficacy, pain-related functioning, depression, anxiety, and psychological inflexibility in FMS patients. Among FMS patients, a decrease in psychological inflexibility facilitated improvement in pain disability (Wicksell et al., 2012).

## **1.2. Purpose of the study**

Disease characteristics are largely unchangeable and can have a negative impact on well-being. Psychological flexibility and mindfulness are skills that can be taught and can improve physical and psychological wellness and decrease symptom severity in individuals with incurable chronic illnesses (Wicksell et al., 2012). Although these connections have

been established, this study is unique in that we compared the experiences of individuals diagnosed with two distinct types of chronic conditions: functional somatic symptom disorders and autoimmune disorders. Therefore, our primary goal was to examine if psychological flexibility and mindfulness predict physical and psychological wellness beyond the effects of disease characteristics and related symptoms, such as pain, depression, and anxiety. Our secondary goal was to examine whether mindfulness and psychological flexibility in individuals who suffer from different types of disorders.

## 2. METHODS

### 2.1. Participants

We recruited individuals diagnosed with FSSD (FMS, CFS) and AD (MS, RA) from online forums and support groups. Overall, 642 participants completed the study; however, many respondents reported comorbidities and thus, the resulting data analyses were based on 112 participants with only FMS (284 total), 82 with only CFS (218 total), 102 with only MS (121 total) and 105 with only RA (166 total). In all disorder categories, the majority of the participants were female ( $n = 523$ ; 81.5%) and had received treatment for their illness. All participants were included in the analysis regardless of gender, and gender was controlled for when appropriate. In total, the FSSD sample included 194 ( $M_{age} = 44.33$ ,  $sd = 15.11$ ) and the AD sample included 207 ( $M_{age} = 48.31$ ,  $sd = 11.27$ ) participants. Participants with FSSD's were less likely to receive treatment (CFS: 63.6% and FMS: 86.4%) than those with MS (92.8%) and RA (93.1%). Regardless of illness, there was a drop of employment from the time of diagnosis to survey completion. Most participants lived in either Canada (25.7%) or the United States of America (39.3%), but a wide range of nationalities was demonstrated including Australia (5.3%), the United Kingdom (11.7%) and other countries (6.1%).

### 2.2. Measures

The **Edmonton Symptom Assessment Scale** (ESAS; Chang et al., 2000;  $\alpha = .819$ ) was used to assess the severity of self-reported medical symptoms. The ESAS is a 9-item self-report scale in which the current severity of symptoms is rated on a 0 (not experienced) to 10 (most severe) scale. Items include physical symptoms such as pain and tiredness, and psychological symptoms such as depression, and well-being). ESAS: Physical was defined as the mean of the items focused on physical wellness (nausea, shortness of breath, appetite, pain, fatigue). The **Satisfaction with Life Scale** (SWLS; Diener et al., 1985;  $\alpha = .879$ ) assesses global satisfaction with life. It contains five statements and uses a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree), with high scores indicating high satisfaction with life. The **Generalized Anxiety Disorder -7** (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006;  $\alpha = .819$ ) is a seven-item scale that assesses experienced anxiety symptoms in the last two weeks. Individual item scores range from 0 (not at all) to 3 (nearly every day). The **Patient Health Questionnaire Mood Scale** (PHQ-9; Martin, Reif, Klaiberg, & Braehler, 2006;  $\alpha = .895$ ) was used to assess self-reported depression. Scores can be divided into four categories: severe (scores >20), moderately severe (15 – 19), moderate (10 – 14), mild (5 – 9), and minimal (<5). Participants rated their subjective depression in the last two weeks from 1 (not at all) to 7 (nearly half of all days) on nine items such as, “feeling down, depressed, or hopeless”. The **Adolescent and Adult Mindfulness Scale** (AAMS; Droutman et al., 2018;  $\alpha = .800$ ) measures key components of mindfulness which includes a focus of the present moment (AAMS: AA), being nonreactive (AAMS: NonR), being non-judgmental (AAMS: NonJ), and self-aware (AAMS: SA). It consists of 24 statements

such as “I notice when my moods begin to change,” with individual scores ranging from 1 (never true) to 5 (always true), with higher scores indicating increased mindfulness. Psychological flexibility was assessed using the **Comprehensive Assessment of Acceptance and Commitment Therapy** processes (CompACT; Francis, Dawson, & Golijani-Moghaddam, 2016;  $\alpha = .812$ ). This comprehensive measure of psychological flexibility is theorized using the ACT model (Hayes et al., 2016) and contains 23-items scored on a Likert scale from 1 (strongly disagree) to 7 (strongly agree), where high scores equate with high psychological flexibility. Subscale scores include Openness to Experience (CompACT: OE), Behavioural Awareness (CompACT: BA), and Valued Action (CompACT: VA).

### 2.3. Procedure

The study was approved by the University of New Brunswick Saint John Research Ethics Board. A survey package was created and distributed on Qualtrics, an online questionnaire platform. Participants were recruited via social media (e.g., Facebook) and disease specific information and support websites. Individuals were sent to a short description of the study and a link to the consent form. Once informed consent was provided, a set of demographic questions were asked. The remaining questionnaires were presented in random order. At the end of the study, participants were thanked for their participation and directed to another website where they could enter their name for a draw for a \$50 gift card (three will be awarded).

## 3. RESULTS

### 3.1. Statistical analysis

Means and standard deviations were calculated for relevant demographic variables (e.g., age, gender, employment status, time since diagnosis) and t-tests were used to determine if there were statistically significant differences between the two classes of disorders. Pearson's  $r$  was used to assess the associations between the predictor and outcome variables and Fishers  $r$  to  $z$  scores were calculated to assess differences in the strength of these correlations. To examine if mindfulness and psychological flexibility contributed to physical and psychological wellness, four hierarchical regressions were conducted. In both regressions, Block 1 included demographic variables (biological sex, age, illness category), Block 2 included measures of wellness depression (PHQ-9), anxiety (GAD-7), satisfaction with life (SWLS) or ESAS: Physical Total), and Block 3 included three mindfulness subscales (AAMS) or psychological flexibility (CompACT subscales).

### 3.2. Primary analyses

Overall, compared to the AD group, the FSSD group reported worse physical symptoms on the Edmonton Symptom Assessment Scale, with higher levels of Pain, Tiredness, Drowsiness, Nausea, Appetite Problems, and Shortness of Breath. In addition, compared to individuals diagnosed with an AD, individuals who reported a FSSD had greater depression (PHQ-9), lower life satisfaction (SWLS) as well as greater scores on mindfulness subscale, Acting with Awareness (see Table 1). Scores indicate important differences between the groups in terms of overall depression and life satisfaction. Relative to norms, individuals who have been diagnosed with a FSSD have moderate levels of depression (Martin et al., 2006) and life satisfaction that is lower than average (Diener et al., 1985).

Table 1.  
Mean and standard deviation of Variables Associated with Physical and Psychological Wellness.

	Functional Somatic Symptom Disorders (FSSD)		Well-defined Autoimmune Disorders (AD)		<i>t</i>
	M	<i>s</i>	M	<i>s</i>	
SWLS: Life Satisfaction	2.73	1.21	3.31	1.49	-3.77***
PHQ-9: Depression	1.37	0.58	1.11	0.61	3.78***
GAD-7: Anxiety	1.39	0.78	1.23	0.76	1.76*
<b>Edmonton Symptom Assessment Scale</b>					
Total Scale Score	4.14	1.56	3.47	1.75	4.68***
Total Physical Symptom Severity	4.09	1.56	3.34	1.76	5.21***
Pain	5.12	2.35	4.36	2.71	2.56**
Tiredness	7.14	1.84	6.03	2.43	4.40***
Drowsiness	5.63	2.68	4.75	2.92	2.72**
Nausea	1.92	2.60	1.36	2.14	2.04*
Appetite	2.77	2.97	1.99	2.53	2.45*
Shortness of Breath	1.93	2.28	1.54	2.16	1.52
<b>Adult Adolescent Mindfulness Scale</b>					
Acting with Awareness (AA)	3.53	0.82	3.28	0.79	2.76**
Non-Reactivity (NonR)	2.95	1.17	3.07	1.19	-0.91
Non-Judging (NonJ)	3.23	0.87	3.36	0.81	-1.43
Self-Acceptance (SA)	3.57	1.00	3.74	0.86	-1.56
<b>Comprehensive Assessment of Acceptance and Commitment Therapy</b>					
Openness to Experience (OE)	3.99	1.17	4.03	0.95	-0.34
Behavioural Awareness (BA)	3.92	1.29	3.78	1.35	0.89
Value Added (VA)	2.89	0.98	2.87	1.00	0.14

Note. \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ .

There were statistically significant correlations between mindfulness, psychological flexibility, and wellbeing (see Table 2). AAMS-Self Acceptance was consistently associated with aspects of physical and psychological wellness for both FSSD and AD participants. For participants in both illness categories, AAMS: Non-Reactivity was inversely correlated with ESAS total score, depression, and anxiety. AAMS: Non-Judging was inversely associated with both depression and anxiety in FSSD participants and with anxiety in AD participants, suggesting that being non-judgemental of one's inner experiences may alleviate psychological distress. Although CompACT subscale scores were negatively correlated with physical and psychological symptoms for all participants, it is interesting to note that psychological flexibility was not associated with overall life satisfaction in participants who reported an FSSD. For individuals reporting an AD, higher life satisfaction was associated with AAMS:SA and all aspects of psychological flexibility. For individuals who reported an FSSD, the sole correlate of SWLS was CompACT: Value Added.

Table 2.  
Correlations between AAMS and CompACT subscale scores and measures of physical and psychological well-being.

	ESAS Total	ESAS Physical Symptom Severity Total	GAD-7 Anxiety	PHQ-9 Depression	SWLS Life Satisfaction
<b>FUNCTIONAL SOMATIC SYMPTOM DISORDER (FSSD)</b>					
<b>AAMS Subscales (Mindfulness)</b>					
Acting with Awareness	.003	.018	.024	.086	.056
Non- Reactivity	-.405***	-.324***	-.495***	-.361***	.119
Non-Judging	-.096	-.055	-.261**	-.300***	-.033
Self-Acceptance	-.401***	-.267***	-.602***	-.520***	.156
<b>CompACT Subscales (Psychological Flexibility)</b>					
Openness to Experience	-.391***	-.217*	-.607***	-.428***	.160
Behavioural Awareness	-.378***	-.293***	-.450***	-.376***	.082
Value added	-.352***	-.215*	-.378***	-.396***	.410***
<b>AUTOIMMUNE DISORDERS (AD)</b>					
<b>AAMS Subscales (Mindfulness)</b>					
Acting with Awareness	-.074	-.070	-.116	-.080	.135
Non- Reactivity	-.229**	-.155	-.441***	-.344***	-.006
Non-Judging	-.093	-.090	-.171*	-.139	-.055
Self-Acceptance	-.453***	-.393***	-.570***	-.567***	.239**
<b>CompACT Subscales (Psychological Flexibility)</b>					
Openness to Experience	-.473***	-.417***	-.603***	-.523***	.375***
Behavioural Awareness	-.484***	-.445***	-.548***	-.528***	.316***
Value added	-.369***	-.299***	-.388***	-.404***	.502***

Note. \*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ . <sup>1</sup>High ESAS scores indicate more severe symptoms.

### 3.3. Prediction of severity of physical symptoms

To examine if mindfulness and psychological flexibility impact overall severity of physical symptoms, two hierarchical linear regressions were conducted (see Table 3). Block 1 variables included age, gender, and illness category (FSSD vs. AD), Block 2 variables assessed psychological wellness and distress and included depression (PHQ-9), anxiety (GAD-7), and life satisfaction (SWLS), and Block 3 included either AAMS subscales (regression 1) or CompACT subscales (regression 2). The first regression predicting ESAS: Physical Symptom Severity was statistically significant,  $F(10, 268) = 15.070$ ,  $p < .001$ ,  $R^2 = .360$ . Block 1 demographic variables contributed 7.8% of the variability; being younger and reporting an FSSD was associated with higher ESAS: Physical scores. Block 2 contributed 28.1% of the variability, with increased PHQ-9 and GAD-7 and lower SWLS

predicting higher ESAS: Physical scores. Block 3 was not statistically significant, indicating that mindfulness subscales did not predict severity of physical symptoms. The second regression predicting ESAS: Physical Symptom Severity was statistically significant,  $F(9, 265) = 17.80, p < .001, R^2 = .377$ . Block 1 contributed 8.1% of the variability; being female, being younger, and having an FSSD were associated with greater severity of physical symptoms. Block 2 contributed 27.8% of the variability; increased PHQ-9 and GAD-7 as well as lower SWLS was associated with higher ESAS: Physical Symptom Severity. Although Block 3, CompACT subscales, contributed an additional 1.8% of the variability, it was not statistically significant ( $p = .06$ ).

Table 3.  
Hierarchical Multiple Regression Predicting ESAS: Physical scores.

	<i>B</i>	$\beta$	<i>t</i>	<i>p</i>
<b>Regression 1</b>				
<b>STEP 1</b>				
Sex	-.678	-.109	-1.88	.061
Age	-.017	-.130	-2.22	.027
Illness Group	-.675	-.197	-3.36	<.001
<b>STEP 2</b>				
GAD-7: Anxiety	.632	.282	4.41	<.001
PHQ-9: Depression	.631	.224	3.22	.006
SWLS: Life Satisfaction	-.224	-.191	-3.44	<.001
<b>STEP 3: AAMS</b>				
Acting with Awareness	.042	.020	0.35	.730
Non- Reactivity	-.005	-.003	-0.05	.958
Non-Judging	.081	.039	0.60	.547
Self-Acceptance	-.058	-.031	-0.43	.669
<b>Regression 2</b>				
<b>STEP 1</b>				
Sex	-.774	-.123	-2.10	.036
Age	-.016	-.125	-2.13	.034
Illness Group	-.680	-.198	-3.36	<.001
<b>STEP 2</b>				
GAD-7: Anxiety	.637	.286	4.34	<.001
PHQ-9: Depression	.609	.216	3.09	.002
SWLS: Life Satisfaction	-.227	-.193	-3.46	<.001
<b>STEP 3: CompACT</b>				
Openness to Experience	-.165	-.101	-1.50	.134
Behavioural Awareness	.207	.160	2.58	.010
Value added	-.071	-.041	-0.71	.484

Note. High scores on ESAS indicate lower levels of functioning.

### 3.4. Prediction of satisfaction with life

Two hierarchical linear regressions were conducted to assess how mindfulness and psychological flexibility impacted satisfaction with life. As above, Block 1 variables included disorder type, gender, and age, with ESAS Total Physical Symptom Severity Score entered

in Block 2, and AAMS subscales (regression 1) or CompACT subscales (regression 2) entered in Block 3 (see Table 4). The first regression to assess the effects of aspects of mindfulness on psychological wellbeing (SWLS) was statistically significant,  $F(8, 277) = 9.69, p < .001, R^2 = .21.9$ . Block 1 contributed 5.8% of the variability in SWLS; being female and having a FSSD was associated with lower SWLS. Block 2 contributed 13.1% of the variability, with higher ESAS: Physical Symptom Severity predicting lower SWLS. AAMS Subscales in Block 3 contributed an additional 2.9% of the variability; higher AAMS Self-Acceptance predicted SWLS. The second regression to assess the effects of psychological flexibility was also statistically significant,  $F(7, 269) = 18.42, p < .001, R^2 = .324$ . Block 1 contributed 4.8% of the variability in SWLS; individuals who reported a FSSD had lower Satisfaction with Life scores. Block 2 contributed 12.8% of the variability, with higher ESAS: Physical predicting lower SWLS. Block 3 contributed an additional 14.6% of the variability, with CompACT: VA adding significantly to the model. Taken together, these results indicate that, after controlling for demographic variables and factors associated with physical wellness, the value-added component of psychological flexibility predicted greater life satisfaction.

Table 4.  
Hierarchical Multiple Regression Predicting Satisfaction with Life Scores.

	<i>b</i>	$\beta$	<i>t</i>	<i>p</i>
<b>Regression 1</b>				
<b>STEP 1</b>				
Sex	-.699	-.132	-2.273	.024
Age	.005	.043	.731	.465
Illness Group	.595	.202	3.448	<.001
<b>STEP 2</b>				
ESAS: Physical Symptom Severity	-.327	-.378	-6.751	<.001
<b>STEP 3: AAMS</b>				
Acting with Awareness	.114	.064	1.009	.314
Non- Reactivity	-.027	-.022	-.338	.736
Non-Judging	-.208	-.119	-1.661	.098
Self-Acceptance	.289	.185	2.597	.010
<b>Regression 2</b>				
<b>STEP 1</b>				
Sex	-.620	-.115	-1.946	.053
Age	.006	.051	.847	.398
Illness Group	.541	.185	3.091	.002
<b>STEP 2</b>				
ESAS: Physical Symptom Severity	-.319	-.374	-6.512	<.001
<b>STEP 3: CompACT</b>				
Openness to Experience	.131	.095	1.485	.139
Behavioural Awareness	-.047	-.042	-.664	.507
Value added	.547	.369	6.656	<.001

#### 4. DISCUSSION

The goal of the current study was to determine how psychological flexibility and mindfulness were associated with greater physical and psychological wellness in individuals diagnosed with chronic FSSD and AD. Although autoimmune diseases, such as MS and RA, can be diagnosed using specific medical tests, the diagnosis of a FSSD involves a method of exclusion via symptom analysis, resulting in a longer time to diagnosis. The uncertainty in diagnosis and ambiguous treatment strategies can have detrimental effects on physical and psychological wellness (Åsbring & Näravänen, 2002). When compared to the general population individuals with a FSSD have moderate levels of depression (Martin et al., 2006) and lower than average life satisfaction (Diener et al., 1985). Comparably, in this study, individuals with FSSD reported more physical and psychological symptoms and had lower subjective well-being than those diagnosed with an AD. Individuals with a FSSD had SWLS scores that were significantly lower than individuals reporting an AD, and relative to norms, the scores of individuals with an FSSD were <20, indicating problems in at least one area of their life (likely their health; Diener, n.d.).

Certain aspects of mindfulness, including being non-reactive and self-accepting appear to be important to understanding the relationship between physical symptoms, psychological distress, and overall subjective well-being across both illness groups. T-tests indicated no statistically significant differences between the illness groups in mindfulness, except for the mindfulness subscale measuring being present and focusing on the current moment, in which individuals with FSSD made more use of this aspect of mindfulness, which is defined by an awareness of surroundings, thoughts, feelings, and events (Droutman, 2018). Despite the moderate correlations between mindfulness subscales and wellness, regression analyses indicated that mindfulness did not predict overall physical symptom severity and only the self-acceptance subscale was a statistically significant predictor of life satisfaction. At the correlational level, current results partially replicated Zabot-Zinn (1982) who reported that use of a mindfulness, stress, and relaxation program in chronic pain patients who did not improve from conventional treatments had a decrease in pain, number of physical symptoms, a decrease in psychiatric symptoms and an overall improved mood.

Correlational analyses indicated that aspects of psychological flexibility scores were associated with lower severity of physical and psychological symptoms and, for individuals diagnosed with an AD, greater life satisfaction. Living in accordance with one's values (valued action component of psychological flexibility) was important in predicting subjective well-being (SWLS), which replicates Proctor and Best (2019) who examined the association between CompACT and wellness in brain injury patients. These results suggest that different types of psychological flexibility are indicative of different aspects of health and suggest that CompACT training should focus on the complex interaction between overall wellness and psychological flexibility. The value-based action aspect of ACT has been shown to be beneficial to individuals living with chronic conditions such as pain (Wicksell et al, 2008). Given that disease characteristics are largely unchangeable and can have a negative impact on wellbeing, focusing on psychological flexibility as a modifiable factor could lead to beneficial changes. Although mindfulness and psychological flexibility did not predict overall physical symptom severity, future research could focus on examining the complex interplay between physical and psychological wellness. Individuals with chronic conditions could receive training that could ultimately improve their physical and psychological wellness.

## 5. DIRECTIONS FOR FUTURE RESEARCH

Having an incurable chronic illness is detrimental to well-being because of both the physical and psychological impacts of illness. These negative effects are exacerbated in those facing more than one long-term medical diagnosis. Therefore, examining the associations between medical and psychological comorbidities and psychological flexibility could serve to be especially important to improve a person's well-being when they have been diagnosed with more than one illness. Further, although the effects of mindfulness and psychological flexibility-based training have been examined in chronic illness populations, a comparison of different illness groups (e.g., FSSD and AD) has not been performed. Examining these effects in a longitudinal research design rather than in cross-sectional research would prove to be beneficial to observe how these relationships change with time after diagnosis.

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## KEY TERMS & DEFINITIONS

**Functional Somatic Symptom Disorder (FSSD):** are a class of illnesses characterized by persistent and chronic bodily complaints that do not have an identifiable explanation.

**Psychological Flexibility:** involves a focusing on the present moment and the prioritization of thoughts, emotions, and behaviours that align with an individual's values and goals.

**Mindfulness:** involves focussing on the present moment by noticing surroundings, thoughts, feelings, and events, being nonreactive, being non-judgemental, and self-accepting.

**Fibromyalgia (FMS):** a type of FSSD that is characterized by chronic widespread muscle and joint pain.

**Chronic Fatigue Syndrome (CFS):** a type of FSSD that is characterized by severe and chronic fatigue that does not improve with rest and interferes with daily functioning.

**Multiple Sclerosis (MS):** is a chronic inflammatory disease affecting myelin sheaths on axons causing lesions or plaques and can affect all functions of the central nervous system.

**Rheumatoid Arthritis (RA):** is a chronic inflammatory joint disease that is caused by damage from immune cells to the synovial membrane of joints, destroying cartilage and bone leading inflammation and damage, and manifestations outside of joints such as cardiovascular disease.

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## Chapter #24

### RELIABILITY AND CONSTRUCT VALIDITY OF A NEW JAPANESE TRANSLATION OF THE SUBJECTIVE VITALITY SCALE

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#### ABSTRACT

The trait scale of the Subjective Vitality Scale (Ryan & Frederick, 1997) is a widely used self-report measure of subjective vitality as a characteristic of the individual. However, certain problems with two items included in the measure have been pointed out. Therefore, three versions with different items are currently used in research (i.e., the 7-item, 6-item, and 5-item versions). This study aimed to develop and validate a new Japanese translation (SVS-J) of these versions using a sample of 424 Japanese college students. Exploratory and confirmatory factor analyses supported the unidimensionality of the three versions. However, the one-factor structure provided a better fit to the data for the 5-item version than for the other versions. All the versions showed good internal consistency reliability (Cronbach's alphas = .87 to .91) and test-retest reliability ( $r_s = .79$  to  $.80$ ). The expected correlations with scores on the hedonic and eudaimonic well-being, self-esteem, and mental illness measures were found to be common to the versions, confirming the convergent validity of the SVS-J. These findings show little evidence of problems with items, indicating that the choice of version may be insignificant. The versions were shown to be reliable and valid trait scales of subjective vitality and to have almost the same utility.

*Keywords:* subjective vitality, trait scale, Japanese translation, reliability, construct validity.

## 1. INTRODUCTION

### 1.1. Vitality

Vitality is classically defined as having physical and mental energy (Ryan & Deci, 2008; Ryan & Frederick, 1997). The concept of vitality reflects both organismic and psychological wellness and not simply a physical state (Ryan & Deci, 2017; Ryan & Frederick, 1997). Moreover, vitality is distinct from forms of activation, such as anger and anxiety, and non-activated positive states, such as happiness and satisfaction (Nix, Ryan, Manly, & Deci, 1999; Ryan & Deci, 2008). Individuals with vitality experience a sense of enthusiasm, aliveness, and energy that is available to the self (Ryan & Frederick, 1997).

Vitality is an aspect of eudaimonic well-being (Ryan & Deci, 2001, 2017) and a main component of character strengths (Dubreuil, Forest, & Courcy, 2014; Ryan & Deci, 2001; Toner, Haslam, Robinson, & Williams, 2012). As an indicator of organismic and psychological wellness, vitality is related to experiences of volition, effectance, and integration of the self at the psychological level, and good physical health and bodily functioning at the somatic level (Ryan & Bernstein, 2004; Ryan & Deci, 2008; Ryan & Frederick, 1997).

Because vitality is a complex construct reflecting physical and mental aspects of an individual's well-being (Ryan & Deci, 2008, 2017; Ryan & Frederick, 1997), researchers have proposed various definitions and measures for it with different emphases (Ryan & Bernstein, 2004). Among them, a construct that emphasizes an individual's subjective feeling is called subjective vitality, which is defined as the subjective experience of feeling aliveness, vigor, and energy available to the self (Ryan & Bernstein, 2004; Ryan & Frederick, 1997). Subjective vitality has two aspects: trait as a characteristic of the individual and state as a temporary condition (Ryan & Deci, 2008, 2017; Ryan & Frederick, 1997).

## **1.2. The subjective vitality scale**

The Subjective Vitality Scale (SVS; Ryan & Frederick, 1997) is the standard measure for assessing subjective vitality. It refers to two types of scale corresponding to the aspects of subjective vitality: the trait scale, which measures individual difference levels of subjective vitality, and the state scale, which assesses the current state level of subjective vitality. The present study used a trait scale. The trait scale is a brief self-report measure that has been widely used in research (Ryan & Bernstein, 2004). Appropriate psychometric properties have been supported across different age groups and populations (Kawabata, Yamazaki, Guo, & Chatzisarantis, 2017; Liu & Chung, 2019; Ryan & Frederick, 1997). Moreover, translations are available in many languages, including Arabic (Fayad & Kazarian, 2013), Chinese (Liu & Chung, 2019), French (Salama-Younes, Montazeri, Ismail, & Roncin, 2009), German (Bertrams, Dyllick, Englert, & Krispenz, 2020), and Japanese (Kawabata et al., 2017).

Numerous previous studies using the trait scale have supported that subjective vitality as a marker of wellness was significantly related to a wide variety of psychological and physical variables. These values include well-being, e.g., life satisfaction, self-actualization, and satisfaction with basic psychological needs; self-esteem; personality traits; affect; mental illness, e.g., depression, anxiety, and general psychopathology; physical illness, e.g., the experience of pain and physical symptoms; and somatic factor, e.g., physical self-efficacy and body functioning (Kasser & Ryan, 1999; Ryan & Bernstein, 2004; Ryan & Deci, 2008; Ryan & Frederick, 1997; Yu, Zhang, Nunes, Deng, & Levesque-Bristol, 2020).

Three versions with different items have been used as the trait scale: the 7-item, 6-item, and 5-item versions. Recent studies have used one of the three versions (e.g., Jackson & DiPlacido, 2019; Wu & Buchanan, 2019; Yu et al., 2020). The original English measure (the 7-item version) developed by Ryan and Frederick (1997) consists of seven items and has adequate internal consistency reliability and test-retest reliability over 8 weeks. Moreover, a series of studies showed that the construct validity of the 7-item version was extensively supported based on correlations with various variables (Ryan & Frederick, 1997).

However, thereafter, Bostic, Rubio, and Hood (2000) found in a U.S. college student sample that of the seven items, the negatively worded Item 2 ("I don't feel very energetic") showed a lower factor loading and decreased the internal consistency of the measure. Therefore, the 6-item version, with Item 2 removed, was recommended as a unidimensional measure of vitality. Furthermore, Kawabata et al. (2017) pointed out that Item 5 ("I look forward to each new day") is a poor indicator of vitality, as it is more about optimism than energy. They compared the English versions and Japanese translations of the 7-item, 6-item, and 5-item versions in Singaporean and Japanese college student samples. As a result, in both the English and Japanese translations, the 5-item version showed higher unidimensionality and was preferable to the other versions from a methodological and content validity perspective. Likewise, in the Chinese version, the 5-item version was also more reliable and valid than the 7-item and 6-item versions (Liu & Chung, 2019).

The researchers who reexamined the SVS mainly presented problems regarding the wording of Item 2 and the content of Item 5. However, the authors who developed and validated the original 7-item scale (i.e., Ryan & Frederick, 1997) closely examined the scale items and then concluded that all seven items reflected “an adequate definition of a phenomenological sense of aliveness and energy” (p. 540). Although Kawabata et al. (2017) has already developed a Japanese translation of the SVS, research and understanding of subjective vitality in Japan should be promoted by developing a new Japanese translation and examining its versions with different items.

### **1.3. Purpose of the study**

This study newly translated the SVS trait scale into Japanese (SVS-J) and examined the reliability and construct validity of the 7-item, 6-item (removing Item 2), and 5-item (removing Items 2 and 5) versions of the translation (SVS-J-7, SVS-J-6, and SVS-J-5, respectively). First, the hypothesized unidimensionality of the three versions was assessed. Then, the internal consistency and temporal stability were examined. Because a test-retest correlation of .64 for an eight-week interval was found for the original SVS (Ryan & Frederick, 1997), a high to very high test-retest correlations was expected for shorter intervals. Finally, convergent validity was assessed through correlations with scores on hedonic and eudaimonic well-being, self-esteem, and mental illness measures. Hedonic well-being was assessed using the three components of the tripartite model (Diener, 1984): life satisfaction, positive affect, and negative affect. Based on previous studies (Kawabata et al., 2017; Ryan & Frederick, 1997), it was expected that the SVS-J scores would be positively and moderately to highly correlated with life satisfaction scores, positively and moderately correlated with positive affect scores, and negatively and moderately correlated with negative affect scores. Because vitality is within eudaimonic well-being (Ryan & Deci, 2001, 2017), the SVS-J scores would be more highly correlated with scores on eudaimonic well-being measures. Based on the findings of Ryan and Frederick (1997), the SVS-J scores would be positively and highly correlated with scores on self-esteem measure and negatively and moderately to highly correlated with scores on depression and anxiety measures.

## **2. METHOD**

### **2.1. Participants**

The participants were 424 Japanese undergraduate students (54.5% female), with a mean age of 20.64 years ( $SD = 1.41$ ; age range = 17 to 27). They were from two colleges in Japan and studied engineering or cross-cultural studies. All participants voluntarily participated in this study independently of their courses.

### **2.2. Measures**

#### **2.2.1. Japanese translation of the trait scale of the subjective vitality scale**

The original trait scale of the SVS was translated into Japanese using a translational process conceived by referring to several guidelines (e.g., Beaton, Bombardier, Guillemin, & Ferraz, 2000; Sousa & Rojjanasrirat, 2011) with permission from Dr. Richard M. Ryan (personal communication, April 12, 2013). This translational process was based on a translation and back-translation procedure (Brislin, 1970). The items of the original English measure were translated into Japanese by a bilingual professor and translated back into English by another bilingual professor. They fully understood the concept of vitality and self-determination theory. Then, the consistency between the translation and back translation

was checked by two researchers. This procedure was repeated until an acceptable degree of consistency was achieved. Because each original item was a brief and plain expression of experiences familiar to Japanese people, cultural relevance and item difficulty should have little influence on the translation procedure. As a result, consistency between them was satisfactorily achieved. The outcomes of this procedure, confirmed by seven graduate and undergraduate students, showed they had no problem understanding and responding to the items.

The original SVS consists of seven items rated on a 7-point Likert scale ranging from 1 (*not at all true*) to 7 (*very true*). The items of the Japanese translation were also rated on the same Likert scale as the original measure was.

### **2.2.2. Other measures**

#### **(1) Life satisfaction**

Life satisfaction was measured using the Japanese version of the 5-item Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985; Sumi, 2020). The items are rated on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The Japanese version had good internal consistency reliability (Cronbach's alphas = .78 and .82), test-retest reliability over a 4-week period ( $r = .73$ ), factorial validity of the single factor structure, and convergent validity based on acceptable correlations with scores on well-being measures.

#### **(2) Positive and negative affect**

The Japanese version of the 12-item Scale of Positive and Negative Experience (Diener, Wirtz, Tov, Kim-Prieto, Choi, Oishi, Biswas-Diener, 2010; Sumi, 2013, 2014) was used to measure positive and negative affect. This measure comprises a 6-item positive affect subscale and a 6-item negative affect subscale with a 5-point response format ranging from 1 (*very rarely or never*) to 5 (*very often or always*). Both subscales of the Japanese version showed good internal consistency reliability (Cronbach's alphas = .86 to .93) and test-retest reliability over one month ( $r_s = .60$  and  $.57$ , respectively). The subscales were loaded into two separate factors. Convergent validity was supported by correlations with scores on several well-being measures.

#### **(3) Eudaimonic well-being**

Eudaimonic well-being was assessed using the Japanese version of the Flourishing Scale (Diener et al., 2010; Sumi, 2013, 2014), which consists of eight items describing broad and important aspects of psychological functioning. These items are rated on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The Japanese version showed good internal consistency reliability (Cronbach's alphas = .94 to .95) and test-retest reliability over one month ( $r = .87$ ), and as expected, a single factor structure. Convergent validity was supported by correlations with scores on several well-being measures.

#### **(4) Self-esteem**

Self-esteem was measured using the Japanese version of the 10-item Self-Esteem Scale (Rosenberg, 1965; Yamamoto, Matsui, & Yamanari, 1982). Each item has a 5-point response format ranging from 1 (*disagree*) to 5 (*agree*). The Japanese version showed factorial validity supporting the hypothesized one-factor structure.

#### (5) Depression and anxiety

The Japanese version of the two subscales taken from the Hopkins Symptom Checklist (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974; Sumi, 1997) was used to measure depression and anxiety. Each subscale contains 11 and seven items, respectively, and assesses the frequency of symptoms during the past seven days on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). Acceptable internal consistency reliability (Cronbach's alphas = .84 to .91), a factor structure similar to that of the original scales, and positive correlations with perceived stress were found (Sumi, 1997, 2007; Sumi & Kanda, 2002).

### 2.3. Procedure of questionnaire administration

The participants completed all questionnaires in the first session (Time 1). Four weeks after the session, 385 participants completed only the SVS-J in the second session (Time 2). All questionnaires were administered after informed consent was obtained. Ethical clearance for the study was obtained from the relevant ethical committee.

### 2.4. Data analysis

All the data analyses were conducted for the three versions of the SVS-J. First, to examine the one-factor structure of the versions, an exploratory factor analysis using principal axis factoring was used to explore the underlying factor structure of the versions. Then, a confirmatory factor analysis was performed to test the factor structure. Second, Cronbach's alphas were calculated to examine the internal consistency reliability. In addition, test-retest reliability was assessed using correlations calculated from the data at Time 1 and Time 2. Finally, convergent validity was examined by assessing correlations between scores on the versions and other measures.

## 3. RESULTS

### 3.1. Factor structure

For factor analysis, participants at Time 1 were randomly and equally divided into samples A and B ( $ns = 212$ ). There were no significant differences between the two samples with respect to sex,  $\chi^2(1, N = 424) = .25$ , and age,  $t(422) = .51$ . In addition, no significant differences in mean scores for the three versions were found between the two samples,  $ts(422) = .03$  to  $.22$ .

The exploratory factor analysis of each version was conducted on the data from Sample A. For the SVS-J-7, SVS-J-6, and SVS-J-5, the Kaiser-Meyer-Olkin measures of sampling adequacy were .90, .89, and .84, respectively, and the Bartlett's tests of sphericity were 971.70, 753.33, and 600.84 ( $ps < .01$ ), respectively. These results supported that the collected data were appropriate for factor analysis. As shown in Table 1, the exploratory factor analysis yielded one factor with eigenvalues greater than 1.0, accounting for 60.40%, 59.81%, and 60.44% of the total variance for SVS-J-7, SVS-J-6, and SVS-J-5, respectively. In each version, the factor loadings of the items were greater than .56.

Table 1.  
Factor Loadings for Exploratory Factor Analysis in Sample 1.

Item	SVS-J-7	SVS-J-6	SVS-J-5
1	.86	.87	.86
2	-.80	–	–
3	.62	.62	.60
4	.87	.88	.89
5	.74	.76	–
6	.56	.56	.57
7	.92	.90	.90
Eigenvalue	4.23	3.59	3.02
% of variance	60.40	59.81	60.44

As shown in Table 2, results from subsequent confirmatory factor analysis showed an acceptable fit of the one-factor model of each version to the data from Sample B (GFI > .95, AGFI > .90, NFI > .96, CFI > .98, and SRMR < .04). Table 3 shows the four types of information criteria (AIC, BCC, BIC, and CAIC). When comparing their values, SVS-J-5 was the smallest in all the information criteria. Table 4 shows the standardized factor loadings for each version. In all the versions, the factor loadings were all significant ( $ps < .01$ ) and greater than .61, with coefficients of determination greater than .37.

Table 2.  
Goodness of Fit Indices for Confirmatory Factor Analysis in Sample 2.

Measure	$\chi^2$	df	GFI	AGFI	NFI	CFI	SRMR
SVS-J-7	37.88**	14	.95	.91	.96	.98	.03
SVS-J-6	24.83**	9	.96	.92	.97	.98	.03
SVS-J-5	20.34**	5	.96	.90	.97	.98	.03

\*\* p < .01.

Table 3.  
Information Criteria for Confirmatory Factor Analysis in Sample 2.

Measure	AIC	BCC	BIC	CAIC
SVS-J-7	65.88	66.99	112.87	126.87
SVS-J-6	48.83	49.65	89.11	101.11
SVS-J-5	40.34	40.93	73.91	83.91

Table 4.  
Standardized Factor Loadings for Confirmatory Factor Analysis in Sample 2.

Item	SVS-J-7	SVS-J-6	SVS-J-5
1	.85 (.72)	.85 (.72)	.85 (.73)
2	-.79 (.62)	–	–
3	.61 (.37)	.61 (.37)	.62 (.39)
4	.89 (.79)	.89 (.79)	.89 (.79)
5	.73 (.54)	.75 (.56)	–
6	.64 (.41)	.63 (.40)	.62 (.38)
7	.90 (.81)	.89 (.80)	.89 (.79)

Note. All factor loadings are significant,  $ps < .01$ . Values in parentheses are coefficients of determination.

### 3.2. Internal consistency and test-retest reliability

Table 5 shows the means, standard deviations, range of scores, Cronbach's alphas, test-retest correlations, and corrected item-total correlations for the three versions. Both Cronbach's alphas (.87 to .91) and test-retest correlations (.79 to .80) did not differ significantly between the three versions. Corrected item-total correlations (absolute values) for the SVS-J-7, ranging from .56 to .86, were .75 for Item 2 and .70 for Item 5. Those for SVS-J-6, ranging from .56 to .83, were .71 for Item 5. In addition, intercorrelations between scores on the versions were all near-perfect correlations ( $r_s = .99$ ).

### 3.3. Convergent validity

The correlations between the scores on the versions and other measures are presented in Table 6. In general, the correlations were in the expected direction and magnitude, which is regarded as supporting convergent validity, and quite similar among the versions as well. The scores on each version were moderately positively correlated with the scores on the Satisfaction With Life Scale and Positive Affect scale ( $r_s = .37$  to  $.52$ ) and moderately negatively correlated with scores on the Negative Affect scale ( $r_s = -.37$  to  $-.34$ ). Compared with the hedonic well-being measures, scores on the Flourishing Scale were highly correlated with scores on the versions ( $r_s = .63$  to  $.66$ ). High correlations were also found between the scores on the versions and the Self-Esteem Scale ( $r_s = .53$  to  $.56$ ). Correlations between the scores on the versions, Depression scale, and Anxiety scale were found to be low to moderate ( $r_s = -.40$  to  $-.22$ ).

Table 5.

*Means, Standard Deviations, Range of Scores, Cronbach's  $\alpha$ s, Test-Retest Correlations, and Corrected Item-Total Correlations for Three Versions of the SVS-J at Time 1.*

Measure	<i>M</i>	<i>SD</i>	Range of Scores	Cronbach's $\alpha$	Test-retest <i>r</i>	Range of CITC
SVS-J-7	30.63	7.85	7 – 49	.91	.80	.56 – .86
SVS-J-6	26.42	6.65	6 – 42	.89	.79	.56 – .83
SVS-J-5	21.80	5.64	5 – 35	.87	.79	.54 – .82

Note: Range of CITC = absolute values of range of corrected item-total correlations

Table 6.

*Correlations between Scores on Three Versions of the SVS-J and Other Measures.*

Measure	<i>r</i>			<i>M</i>	<i>SD</i>	Cronbach's $\alpha$
	SVS-J-7	SVS-J-6	SVS-J-5			
Satisfaction With Life Scale	.40	.40	.37	18.70	5.89	.80
Positive affect scale	.51	.52	.50	22.12	4.69	.95
Negative affect scale	-.37	-.37	-.34	16.77	4.97	.88
Flourishing Scale	.65	.66	.63	37.12	6.91	.83
Self-Esteem Scale	.56	.55	.53	31.73	7.29	.87
Depression scale	-.40	-.39	-.37	24.73	8.26	.89
Anxiety scale	-.24	-.22	-.22	14.69	5.41	.85

Note: All correlations are significant at  $p < .01$ .

#### 4. DISCUSSION

This study aimed to develop and validate a new Japanese translation of the SVS. It has been noted that some problems with Items 2 and 5 of the SVS impaired the psychometric properties, such as unidimensionality, in particular, of the 7-item SVS (Bostic et al., 2000; Kawabata et al., 2017; Liu & Chung, 2019). In contrast, as a result of the present study, such shortcomings were not found in the new Japanese translation.

The hypothesized unidimensionality was well supported for the SVS-J-7, SVS-J-6, and SVS-J-5. Both the exploratory and confirmatory factor analyses revealed satisfactory factor loadings for the items, including Items 2 and 5. For each version, the first factor accounted for a substantial portion of the total variance. The goodness-of-fit indices were acceptable and very similar among the versions. However, the SVS-J-5 showed the lowest value of the information criteria (Table 2) and had a better fit of the one-factor model to the data than the other versions.

Internal consistency reliability was also good and similar among the three versions. Although there may be a slightly worsening internal consistency due to a decrease in items, the Cronbach's  $\alpha$ s of all the versions were appropriate values (Nunnally & Bernstein, 1994). Temporal stability over a 4-week period was very high for each version, as expected. Moreover, the corrected item-total correlations of Items 2 and 5 were not lower than those of the other items. Even in terms of the reliability of the SVS-J, there were few problems with Items 2 and 5.

Correlations with scores for hedonic well-being, eudaimonic well-being, self-esteem, depression, and anxiety were also as expected, confirming the convergent validity of the SVS-J. Indeed, the results indicate that vitality is an indicator of wellness (Ryan & Bernstein, 2004). These correlations were very similar among the three versions. In addition, there were near-perfect correlations between scores on the versions. The findings suggest homogeneity as a measure between the versions, regardless of Items 2 and 5.

Based on the fit to the hypothesized factor model, the present findings show that the SVS-J-5 may be a better measure for assessing subjective vitality. However, the other psychometric properties were adequate and comparable among the three versions. Therefore, each version of the new Japanese translation has almost the same utility. These findings contrast with those of previous studies (Bostic et al., 2000; Kawabata et al., 2017; Liu & Chung, 2019), which found the superiority of the 6-item or 5-item version and pointed out the problem with Item 2 or 5. Although the reason for this inconsistency is not clear, one explanation could be that nuances exist in the English and Japanese formulations of the items. While this issue should be examined in future research, the present results indicate no serious problems with Items 2 and 5.

The findings of this study generally support that all versions of the SVS-J are a useful measure to assess subjective vitality with good reliability and construct validity. However, this study has several limitations. First, the sample of this study was limited to college students. Future studies should use other populations such as working people or clinical samples. Second, the interval to assess temporal stability was only 4 weeks. It is necessary to ascertain the temporal stability at various intervals. Third, construct validity was examined through relationship with the psychological variables. Future studies should examine the relationship between physical health and functioning. Finally, additional validity studies of the SVS-J, including predictive and concurrent validity, are needed.

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## Chapter #25

### NON-MEDITATIVE CONTEMPLATION AS A RESEARCH PROJECT IN PSYCHOLOGY: BETWEEN THE CONSCIOUS AND UNCONSCIOUS MIND

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#### ABSTRACT

Contemplation as an unconscious mental phenomenon that exists in the form of a process or a state, forms the properties of an individual (contemplative personality). Notwithstanding the processes of attention, memory, perception, and thinking, contemplation is activated on their basis. The difference consists in uncontrollability of the process, since its contents are not presented to consciousness. While this process has been an integral part of human mentality for ages, and was a factor in the birth of modern Psychology and Philosophy, little research in recent times has gone beyond pragmatic application of the process of contemplation. Our research suggests deeper examination of the synergy of these processes with acceleration of humans and society via technology and global changes. In this we see the difference between contemplation as unconscious activity and Freudian understanding of the unconscious. Other differences are found in invariability of the emotional background of contemplation from start to finish. The process of contemplation should thus be regarded as spontaneous psychological self-therapy for an individual, and considered to be a vital element of mental processes and personality traits.

*Keywords:* contemplation, conscious, unconscious, self-therapy.

#### 1. INTRODUCTION

The dynamism of current events, the rate of technical, economic, social, and organizational changes have increased so considerably that it has become possible to speak of a “dynamic stress” or a stress of insuperable lag behind the quickly changing life. The pace of changes can significantly exceed the personality and social group adaptational potential. The social and psychological consequences of non-optimal speed excess of globalization over opportunities of social and personal designing and self-designing (information glut, fast and continuous change of social, professional, family, interpersonal roles, multiple identification, polyethnization, multiculturalization, manipulization, makiawelization,) are found in “sophisticated” crime, drug abuse, depression, psychosomatic diseases, and mental imbalances. Psychological differentiation is aggravated with each new generation which organically and quickly appropriate updating the birth environment with the corresponding artifacts not always and not fully fitting into the world image of previous generations. By analogy with A.P. Nazaretyan’s hypothesis of technical and humanitarian balance (Nazaretyan, 2008) one can put forward a hypothesis of global dynamic and social personal balance / imbalance.

The phenomenon of the unconscious mastered by science, art, and utilized in the practice of therapy in the versions of Sigmund Freud, Karl Jung, and Paul Delboeuf, among others, is acquiring a different outline today. In this context, contemplation can be compared to a stone that has remained aloof from the so-called construction site of the unconscious. At the same time, the theme of contemplation is widely represented in esoteric and religious publications.

Scientific interest in the problem of contemplation in Samara was initially realized in the format of the Volga Seminar (2011) and then at the All-Russian Conference (2013). On this basis, the prospects for overcoming the well-known opposition of consciousness and the unconscious by means of the category of contemplation were determined (Akopov, 2014; Shestun & Podorovskaya, 2014).

In the practical plan psychological technologies (psychopractice) of modern consultation, diagnostics, maintenances, or correction, do not always produce the desired effect. A series of demo researches has enabled us to regard contemplation as a mental phenomenon that considerably supplements the phenomenon of activity and expands the range of a personality's individual psychological characteristics. Treating contemplation as actualized unconsciousness organically connects it with processes, conditions, and properties of consciousness. As S.L. Rubinstein put it, "Greatness of a person and of his activity is manifested not only in deed but also in contemplation, in his ability to comprehend and correctly treat the Universe, the world, the life" (Rubinstein, 2003, p. 359).

## 2. BACKGROUND

Contemplation is a term seldom used in modern Psychology. The notion of contemplation has the status of a category. A broad response is associated with the term *sensual contemplation*. After K. Marx's works it was "neglectfully" returned to sensualism. It wasn't accepted by "grandiose" prospects of economic, social and political practice, metaphorically indicated as Pandora's box in one of M.K. Mamardashvili's works.

Essential growth of scientific interest and confidence to the problem of consciousness in recent years (Chalmers, 2010; Petrenko, 2010; Revonsuo, 2017; Whitehead, 2008 and others) gives rise to the hope that contemplation will take a worthy place in the categorial system of theoretic and applied psychology and modern science in general (Akopov & Akopian, 2021). In certain contexts (binarity, dichotomizm) it is not purposeful activity and consciousness that underlie one of the basic oppositions in modern psychology of consciousness, but activity and contemplation in the diachronic plan that are deduced from the dialectic discourse "subject and consciousness" (Akopov, 2010).

One of the first studies of contemplation from the standpoint of academic psychology was presented in Han F. De Wit's work on *Contemplative Psychology* (1991). The merging of psychological positions with theoretical concepts and various practices of spiritual beliefs, offered by the author, has become widespread. The category of contemplation in the works of this trend is revealed in terms of spirituality, meditative experience, compassion, etc. In the later studies, there has been an expansion of the problem of contemplation into the field of Science of Consciousness (Dorjee, 2016; Terje, 2017). Nevertheless, meditation still appears as the main concept that identifies the phenomenon of contemplation for example in the articles of *The Journal of Contemplative Enquiry*, Vol. 7, 2020 (<https://journal.contemplativeinquiry.org>), which, in our opinion, does not cover the entire phenomenology of contemplation.

Contemplative science overlooks mental processes and states (mental experience) of contemplation that are random, unpredictable, and spontaneous. These processes and states, for example, in perceptual consciousness, especially visual modality, are often caused by natural or other external factors. At a certain moment, they become meaningfully

unconscious, i.e. unintentional (not directed at the previous visual object). At the same time, the very fact of an unusual state is recognized, i.e. there is that part of the phenomenal consciousness that has the subjective character (Kriegel, 2011), defined as belonging of experience to oneself, to one's Self in the absence of a qualitative determination of the experience (qualia).

As there are some prospects of interpretation of the term *contemplation*, we will mention some established meanings of terms.

In S. I. Ozhegov's dictionary (Ozhegov, 2021) contemplation (contemplate, contemplator, contemplative) is defined as passive observations; inactivity.

A wider range of meanings is found in V.I. Dahl's dictionary: to contemplate is "to examine attentively and continuously, observe, look intently, go deep into the subject, learn it, admire it, consider something carefully with mentality and spirit" (Dahl, 1881, p. 267).

In the Concise Encyclopedia of Philosophy (1994) there are procedural and resultant aspects in three groups of meanings of the term *consciousness*; superficial and inner, perceptual and notional ways of contemplation; "empirical, non-conceptual, irrational comprehension of reality"

In the Encyclopedia of Philosophy, contemplation is defined as "direct connection of consciousness to the subject", "entering through the phenomenon outward to its inward" or (in dialectical materialism) "integral awareness preceding conceptual and logical thinking" (Averintsev et al, 1989).

In one of the new dictionaries of philosophical terms, "essence contemplation" is defined using the term *ideation* (phenomenology by E. Husserl) which is interpreted as "consciousness orientation on "general" ("essence", "eidos", "a priori") and also a method of contemplation of the general". In this case, the term *essence contemplation* is much alike to "categorical contemplation" and "ideation" (Kuznetsov, 2007).

In the historical context contemplation is defined in the Stanford Encyclopedia of Philosophy (<https://plato.stanford.edu/>).

### 3. DEEPER ANALYSIS

#### 3.1. Traditional thoughts

If we compare the previous definitions and characteristics of contemplation with the notional system of Psychology, we get the following results. Contemplation as a term of philosophy can be compared with relevant psychic phenomena, which potentially can be a process, condition or properties of a subject (individual, personality, individuality). Being characterized as a reflection, it can both acquire and lose activity (freedom, intentionality, orientation, mediation, etc.), being an equal phrase "the subject reality" and "the object reality" (Rubinstein, 2003). There is a very interesting statement in S.L. Rubinstein – "contemplation is a reciprocal action of the subject and object realities" (Rubinstein, 2003, p. 409).

Inversing from outward to inward and vice versa contemplation can pay its "attention" to different subjects, objects, phenomena, essence, processes, conditions, etc. making and destroying typologies, classifications, connections, disconnections, the whole and its constituent parts, compositions, and deconstructions.

At the same time contemplation does not have clearly visible, audible, tangible, etc. content (image), being often synchronous with stimulating and supporting visual, aural, kinaesthetic, etc. background. In these terms contemplation can be defined as actualized unconsciousness, i.e. in contemplation the work of unconsciousness is shown to consciousness in forms of nonverbal (internal) languages (Akopov, 2021).

It is to be mentioned that the source and “tool” of contemplation is not just a visual system. There are also certain correlations of sounds (noise of wind and forest, pipe, long songs, symphonic or other compositions, etc.), intracorporal and superficial and muscular harmonious sensations (such as light satiation, feasible physical tension, primary exhaustion), quiet long movement, flight and so on. Contemplation in synchronism can be characterized as being free from history, not being worried about the future in the present.

### 3.2. Literary perspectives

From the standpoint of age-related psychology, contemplation has a dominant role (Ukhtomsky, 2020) during aging and other crises, especially in babyhood, youth, and declining years.

Being ill may stimulate contemplation (see Leo Tolstoy’s story “The Death of Ivan Ilyich”), helping to show latent contexts and meanings. It is crucial to differentiate contemplation and experience. For contemplation, emotions are not obligatory, whereas the fundamental characteristic of experience is emotion.

The character of correlations between contemplation and other psychological processes is rather complicated. Contemplation is congruent to attention but does not coincide with it (non-directional concentration, pensiveness). Contemplation can be turned from the present to the past and vice versa, disorienting the memory. It can be the sensing of reality and unreality, blending perception with imagination. Being alien to mediation, a contemplator does not think, but still he comprehends the essence. Not taking up (responding) any of the emotions mentioned in the science of contemplation perhaps has the majesty of Gioconda by Leonardo da Vinci and at the same time lack of motivation and obvious (visible) activity.

Equalizing the realities of the subject and object (Rubinstein, 2003), contemplation is in opposition (antinomy) to activity confirming or denying the unity of activity and consciousness. Contemplation is opposed to pragmatism (utilitarianism, lucre, commitment, etc.) not only in one of its types – aesthetic contemplation (Kant, 1790/2020). In its “fixed” opposition to any vector of motion (activity) contemplation is illuminating. At the same time, it is not a flash of inspiration or insight, as both of them are final phases of purposeful search; an expected solution of the settled problem. Contemplation is absolutely free since it cannot be regulated.

According to V.F. Petrenko and V.V. Kucherenko, “concentrating on ‘here and now’ by sight of a majestic mountain ridge or looking at the horizon of the great ocean, we feel practically the same as a person who was standing here and contemplating centuries ago. At this moment the past, the present and the future (in sense of an unborn man) merge and we feel the chasm of eternity” (Petrenko & Kucherenko, 2007, p. 172).

Freedom or fortuity (spontaneity) are expressed in the possibility of this condition to be actualized or not, as well as its semantics.

### 3.3. The eastern philosophical background

Correlating contemplation to the phenomena of an altered state of consciousness (ASC) makes it possible, in our opinion, to place contemplation into the class of ASC as an unusual condition of consciousness, if the latter is defined as a kind of ASC. In this case, in the class of ASC contemplation does not coincide with other known phenomena (meditation, trance, prayer, seclusion, mantric and tantric contemplation, Samadhi, Vipassana, etc.). However, some ASC are closely connected with contemplation stimulating or generating each other (Petrenko & Kucherenko, 2007).

With this regard, the conclusion made by V.F. Petrenko and V.V. Kucherenko can, in our opinion, be applied not only to meditation conditions, but also to contemplation. The congruous quality of contemplation and meditation is connected with “change of forms of a categorization of the world, oneself, others, with neutralization of the subject-object opposition of “me” and “the world”, i.e. “duality removal” (Petrenko & Kucherenko, 2007). However, in all similarity of the above-mentioned mechanisms (decategorization, opposition change of the quality “me” – “not me”), the contemplation condition, unlike meditation, is not obligatory and not often associated with disappearance of “me”, “its dissolution in common consciousness of the world”. Contemplating “me” is “in itself” and “in object” (world), it is safe though with hardly distinguishable borderlines that is apparently more common for the western mentality than for the eastern mentality.

A more general mechanism of regulation of conditions in one and the other culture is presented by us as a context of factorial structure of consciousness, the mechanism of a contact ratio (communication, semantic communication) and freedom (a choice, creation) in a combination with internal or external life plans. General for both cultures (West-East), predictors of contemplation are situations of extreme restrictions in external communication (various forms of privacy). Another ratio is in the case of extreme restriction of external freedom which is subjectively accepted in one mentality (East), and only more or less limited in the other (West). Here, in our opinion, is the border between meditative and non-meditative contemplative conditions. As an examples one can mention the contemplating character from F.M. Dostoyevsky’s story “The White Nights” or F. Kafka’s early literary etude named “Contemplation”.

### 3.4. Mysticism

A more differentiated cross-cultural research of the contemplation (meditativeness) moments in ornamentalistics, architecture, gardening, long-drawn-out songs and other genres of musical folklore, poetry etc. will enable us to define a variety of modes and structures imprinted as organic conscious and unconscious additions in different types of human activity.

If we continue the comparison, we note that contemplation is also not the same thing as mystical conditions. According to W. James who, as P.S. Gurevich (Gurevich, 1993) put it, “is still unsurpassed on penetration into secrets of mystical experience” (p. 422), one can draw the following main conclusions. One of the main differences is that a psychological basis of mysticism makes “aspiration to have direct contact with the supernatural” while for contemplation it is not obligatory. P.S. Gurevich points out four main characteristics or criteria of mystical experience according to W. James. Some of them coincide with contemplation manifestations, for example, “impossibility to state own feelings and impressions in usual language since as mystical experience has no concrete analogs in terrestrial life” (Gurevich, 1993, p. 406). The meditating (contemplating) person cannot give a definite answer expressing the experience.

Certainly, it is possible to find certain words as I.A. Ilyin did it in his wonderful sketches: “The person indulges in free and easy watching; happiness of pure and disinterested contemplation is given to him; it enters a God’s theater, ancient as the world and mellow as its Creator”, etc. (Ilyin, 2016, p. 167).

However, the transfer of the “true” contents requires other characteristic of mystical experience – “intuitiveness as a special form of cognition ..., the moments of inward enlightenment” (Gurevich, 1993, p. 416). In accordance with it, P.S. Gurevich, while characterizing “ancient gnosis”, mentions contemplation, all-inclusiveness and intuitiveness of reality comprehension (Gurevich, 1993). Intuitiveness which is common for mysticism does not have anything in common with contemplation, which also can be a form of cognition, an enlightenment. The third feature – short duration – is common both for

mysticism and contemplation, though, in our opinion, in these conditions they must be estimated somewhat differently.

A very important sign of mystical experience is “the will inactivity” (Gurevich, 1993). Contemplation is also characterized by a “stopping” of previous processes, lack of action and movement vector. The difference is, in our opinion, only in a mystical condition, at least a part of previous expectations remains, while contemplation does not have this since it is always one-staged (at the beginning), situational, unexpected (sudden); besides, contemplation is not obligatory, unlike mysticism that seeks “mysterious communication with God and the world” (Gurevich, 1993, p. 413).

Brooding on common features of mysticism and contemplation, one has to agree with the conclusion made by P.S. Gurevich: “In the ocean of consciousness differences between the individual and the world are removed. They disappear in unlimited integrity” (Gurevich, 1993, p. 417).

## **4. EMPIRICAL SURVEY RESULTS**

### **4.1. Preliminary**

Based on the results of the pilot study, a contemplative activity questionnaire was designed. The structure of the questionnaire makes it possible to determine the respondents' ideas of contemplation and personal experience in contemplation. The participants were 18-19 year old students specializing in the pedagogical issues of inclusive education. In a group of 29 subjects, 93 descriptions of contemplation were produced. 42% of them define this state as "immersion into oneself" ("into their own world", "into their thoughts, feelings, dreams", "withdrawal into oneself", detachment from the external the world", "being in your world", "immersing in your world ", " immersing in yourself ", etc.); somewhat more – 46% of respondents define contemplation as a state of calm ("humility"; "pleasure", including aesthetic, "pacification", "unity with the world", "with the surrounding space", "openness to the world", etc.); the rest 12% identify contemplation as "pensiveness", which, apparently, can also be attributed to states.

### **4.2. Deeper analysis**

In the aggregate of students' answers to clarifying questions about the peculiarities of activity during contemplation and its content, we managed to identify the following aspects of the individual's immersion in contemplation:

1) the procedural aspect is characterized by "immersion or withdrawal into oneself", "stopping the internal dialogue", "calmness", "spiritual harmony", "enjoying what is happening", "feeling like a third person, "observer";

2) the content aspect is determined by the participants' statements: "you think about important things in life", "about love of Nature and people, about fate", "you look at beauty, Nature, contemplate it and immediately thoughts about your life, about the past, the future, the present creep into your head", "something that has not been analyzed emerges unconsciously", "the situation is assessed without feelings or emotions";

3) the situational aspect: "contemplation comes in natural environment", "when alone", "when you look at or listen to something beautiful or calm";

4) the functional (effective) aspect: "contemplation helps to correctly analyze what is happening", "gain experience", "sometimes we do not have enough time to pause, contemplate and think over", "harmony with oneself is achieved", "internal clamps go away", "perception changes", "calming the mind", "re-evaluation of events without emotions, without regret, as an observer from the outside", "after contemplation, lightness and joy", etc.

Choosing the conditions specified in the text of the questionnaire that stimulate the process of visual contemplation, the survey participants in approximately the same way recognized as such: "view from the height of a mountain peak", "vastness of the sea", "clouds floating in the sky", "horizon distance", "burning bonfire", "a flowing river". To this list, some students added "a starry sky", "a view of a bright moon." Auditory contemplation is equally stimulated by the "sound of the sea" and "birdsong", a little less – by a "lingering song"; rarely – by "ticking of the clock" and "an audible quiet conversation." The psychomotor activity that promotes contemplation, according to the choice of the participants, consists of the processes of walking and monotonous actions. The quantitative distribution of the selected visual, auditory and kinesthetic stimuli of contemplative states in 29 participants is as follows: 71, 36 and 21 stimulating situations.

### 4.3. Excerpts of reflection

In the experience representations of contemplation, the survey participants identified a significant variability in the content of contemplation: "thoughts themselves come and you think about everything and nothing"; "at one moment – thoughts and memories, at another – just emptiness"; "someone is in the state of lack of any thoughts, while others, at the moment of contemplation, there is a reassessment of the life situation, but without emotions and regret"; "sometimes, when you think about a situation or a question for a long time, you yourself drive yourself into this state"; "in contemplation, internal activity is carried out unconsciously, unperceived", etc.

The participants attribute approximately the same emotional coloring to the process of contemplation. These are mainly states such as: calmness, happiness, satisfaction, freedom, warmth, a sense of unity. Many answers deny any emotional accompaniment of contemplation: "without feelings and emotions", "disconnection from the whole world", "feeling like a third person, an observer." It is interesting to note that in the descriptions of the moment prior to contemplation, the participants do not record any emotions. However, after contemplation they feel calmness, relaxation, "a pleasant aftertaste from the process", "everything falls into place in thoughts"; feeling of harmony, lightness, and joy are attributed. Single statements attributing to an active post-contemplative state: "the feeling that something needs to be changed or some action to be performed right now", or "there is a feeling of irritation if interrupted."

Assessing the frequency of experiencing moments of contemplation, the majority of students chose the mid-position in the proposed scale (very often, often, occasionally, rarely, very rarely). Those who notice the state of contemplation in other people describe the following external signs: "a person looks out with concentration at one point, and does not react to the environment", "looks at something, but is immersed in himself"; thoughtful, peaceful. The ability to evoke a state of contemplation at will, to manage it, was recognized by very few participants. At the same time, as a means of immersion in contemplation, a very limited range of possibilities is noted ("choosing a quiet place", "in the countryside", "in solitude", "after reading a book", "looking out of the window", "at a dull lecture", "taking a long walk", "thinking over some issue for a long time."

Most of the participants stated that contemplation almost always comes spontaneously. At the final stage of the survey they compared contemplation with such mental states as drowsiness (dreaming), thoughtfulness, inspiration, insight, remembering, concentration, meditation, observation, imagining things. The comparison was to be made according to three criteria: a) complete coincidence (identity); b) a certain similarity; c) absolute dissimilarity. The participants attributed a high degree of similarity of contemplation (more than 80%) to states of thoughtfulness and observation; a certain similarity – to inspiration and meditation; complete dissimilarity – to drowsiness and recollection.

## 5. DISCUSSION

Our results, paradoxically, largely coincide with those obtained in studies on samples of high school students (16-17 years old) and university students (20-21 years old), in previously published works (Akopian & Akopov, 2013; Akopian, 2014). The paradox consists in independence of the results from various instruments used and the time difference of 7-8 years. Such reproducibility of the phenomenon of contemplation characterizes it as an important, non-random mental property of a person. At the same time, contemplation cannot be attributed to any of the well-known classes of human mental properties, be it processes (attention, memory, etc.), states, features (factors) of a person. So, the process of attention (direction and concentration of mental activity) cannot be identified with contemplation, which is characterized only by concentration in the absence of an object of direction (excluding the prior state). Contemplation can carry traces of memory, but it is not a purposeful process in recalling, reminiscing, memorizing, etc.

More broadly, it can be argued that contemplation also does not coincide with the phenomena of consciousness, particularly with sensory, perceptual, affective and cognitive consciousness. As is known, one of the generally accepted criteria for the awareness of one or another human activity is the ability to give an account of one's actions, deeds, experiences, and one's states. The phenomenology of contemplation presented above does not allow for speaking about the complete accountability of the process of contemplation to the individual. Only the state of contemplation itself, an immersion in it, is clearly realized. What is being contemplated (excluding pre-contemplative objects of mental activity) is not explicitly conscious, while in sensory, perceptual and other types of consciousness, the object is directly represented in the field of consciousness.

In non-classical psychology (Vygotsky), consciousness is defined by the attributes of communication and generalization. On these grounds, it also cannot be argued that contemplation is a fully conscious process. If one tries to attribute contemplation to unconscious, mental phenomena, then it is also clear that this is not a Freudian libido, nor a Jungian archetype, nor Diel's vanity, etc. At the same time, it is similar to the manifestations of the Ego according to Freud, the Self according to Jung, etc.

Turning to modern studies of consciousness, one can pay attention to such identification of consciousness as qualia (Revonsuo, 2017). Of the five leading ideas that make it possible to identify consciousness (Honderich, 2014), the idea of qualia, in our opinion, enables assigning the status of consciousness to contemplation. At the same time, qualia belongs to the category of phenomenal consciousness, which, in contrast to perceptual, cognitive and other types of consciousness, defines the so-called "Hard Problem" of consciousness (Chalmers, 2010; Velmans, 2002 and others). Difficulty, i.e. the unsolved problem of scientific explanation of phenomenal consciousness, does not allow for the inclusion of contemplation in the categorial space of consciousness.

## 6. CONCLUSION

By way of summarizing, we deem it necessary to mention that placing the category of contemplation into the subject area of modern psychology enables one to study the corresponding phenomena in theoretical, methodological and applied aspects and, in particular, within the boundaries of such branches of psychology as age-related, clinical, ethnic, cross-cultural psychology, psychology of personality etc.

Thus, contemplation appears to be an important constituent part of the known mental processes, states, and personality traits. A peculiarity of the process of contemplation is its awareness by the individual as a special state, despite the fact that the object of contemplation and the very “flow” of the process is not perceived. The functional feature of contemplation is an internal, hidden processing or correction or transformation of micro- and macro-meanings of human life. It is also noteworthy that the process of rethinking is mostly hidden and emotionally positive for the individual. Based on the foregoing, the process of contemplation can be qualified as an individual’s spontaneous psychological self-therapy.

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## Chapter #26

### COMMUNICATION: MOTIVATIONS, GENDER AND STYLE

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#### ABSTRACT

The major aspects of communication include the communicating individual, the addressee, and the style of communication which can be more objective or subjective. The present study examines the role of the communicator's motivation, and of the gender of the communication and of the addressee in regard to the communication style. The motivation was assessed in terms of the cognitive orientation approach (Kreitler & Kreitler, 1982) which assumes that motivation is a function of beliefs that may not be completely conscious. It may be oriented towards sharing or towards withdrawal. The communication style was assessed by the Kreitler meaning system as more objective and interpersonally-shared means or more personal-subjective ones. The hypothesis was that the communication style is determined by one's motivation and by the gender of the communicator and addressee. The participants were 70 undergraduates. The tool was a cognitive orientation questionnaire. The experimental task was a story that had to be recounted. The narratives were coded for communication style. The data was analyzed by the Cox proportional hazards model and regression analysis. The time until the communication style appeared was predicted by the communicator's motivation and the addressee's gender; the communication style by the communicator's motivation and the communicator's gender.

*Keywords:* communication, style, sharing, motivation, cognitive orientation, meaning, gender.

#### 1. INTRODUCTION

Communication is a complex multi-functional process used in different contexts for an ever-increasing number of goals. Major components of communication include the communicating individual or communicator, the recipient of the communication or the addressee, the contents of the communication, and the style of communicating (Barnlund, 2008; Littlejohn, Foss, & Oetzel, 2021). In other words, the main constituents of the event of communication are focused on *who* communicates, to *whom*, *what*, and *how*. The interplay between the mentioned factors turns communication into a dynamic complex which is almost continually changing. Within this complex, it may be possible to focus on one or another of the components in order to assess its relative contribution to the total effect in the final stage. Each one of the components may be considered as focal and serving as the platform in which the impact of the other components is reflected, manifested, and activated. Communication style is a factor of prime importance due to its central position in relation to the communicator, the addressee, and the content.

The present study deals with examining the determinants and role of the communication style. Communication styles have a strong impact on the outcomes of the act of communication. Communication styles are defined as the manner in which an individual habitually presents or expresses the information which constitutes the core of the communication. It is usually regarded as a behavior which is determined both by one's personality and the prevailing circumstances (Communication Style, 2021).

However, the use of one or another communication style depends on the context and is usually adapted to different functions and situations, such as the workplace, teaching, family, romantic meetings, or social gathering (Kuria, 2019; Wegner, Roy, Gorman, & Ferguson, 2018). Different communication styles have been defined, such as aggressive, passive-aggressive, passive, expressive, manipulative, challenging, and submissive (De Vries, Bakker-Pieper, Sieberg, Gamen, & Vlug, 2009). The two communication styles dealt with in the present context refer to sharing information or withholding information. The major reasons for this choice were first, that they concern directly the goal of communication which focuses on information, e.g., its acquisition, presentation, elaboration, or storage. Secondly, these styles were studied in the context of schizophrenics and control subjects (Kreitler, Schwartz, & Kreitler, 1987), and were identified also by interviewing subjects about the goals of communication in neutral social contexts (see Kreitler, 2021b, chapter 5). Thirdly, these styles were found to be a common component in different listings of communication styles or inventories, under different titles, such as expressive, promoting socializing, emotional and personal versus reporting, analyzing, technical or systematic (de Vries et al., 2009; Franksiska, 2006; Halberstadt, 1986; Pânișoară, Sandu, Pânișoară, & Datu, 2015). One assumption underlying the study is that the style of communication salient in a particular setting is determined to some extent by contextual factors, i.e., it depends on the recipient of the communication and its contents.

## 2. BACKGROUND

The study is based on two theoretical approaches. One is the theory of meaning which served as a basis for defining the communication style, and the other is the cognitive orientation theory which was applied for defining the motivation for communication.

### 2.1. Communication styles: The meaning system approach

The communication styles were conceptualized and assessed in terms of the meaning system (Kreitler, 2014a, 2021a; Kreitler & Kreitler, 1990). This system contains variables which enable characterizing communications of any kind by describing their specific features of contents, structure, and forms of expression. The characterization is based on the assumption that communication is a form of expressing meanings. The communication is first divided into units each of which includes a referent (i.e., the input or subject to which meaning is assigned) and the meaning assigned to the referent. For example, the sentence "New York is a city on the Atlantic", includes the following two meaning units: New York is a city, and New York is on the Atlantic. In both units, New York is the referent. In the first unit, the assigned meaning defines the general category to which New York belongs (i.e., it is a city), and the second unit describes the location of this city.

A full description of the communication in terms of meaning variables includes characterizing it by variables of the following kinds: (a) *Meaning Dimensions*, which characterize the contents from the viewpoint of the specific information communicated about the referent, such as the referent's Sensory Qualities (e.g., Sky – blue), Feelings and Emotions it experiences (e.g., Mother –loves her child) or evokes (e.g., Darkness– fear), Range of Inclusion (e.g., Body - the head, arms, and torso); (b) *Types of Relation*, which characterize the immediacy of the relation between the referent and the contents, for example, attributive (e.g., Winter - cool), comparative (e.g., Spring - warmer than winter), exemplifying instance (e.g., Country - the U.S.); (c) *Forms of Relation*, which characterize the formal regulation of the relation between the referent and the cognitive contents, in terms of its validity (positive or negative; e.g., Yoga - is not a religion), quantification (absolute, partial; Apple - sometimes

red), and status (factual, desired or desirable; Law - should be obeyed, Happiness - I wish I had more); (d) *Referent Shifts*, which characterize the shifts in the referents in the course of the communication, which may be minimal, medium or large (e.g., A shift from New York to another city such as Boston, to the U.S. or to urban life in general). (e) *Forms of Expression*, which characterize the forms of expression of the meaning units (e.g., verbal, denotation, graphic) and its directness (e.g., actual gesture or verbal description of gesture) (Kreitler & Kreitler, 1990); (f) *Meta-Meaning* variables, which characterize the attitude toward the meaning communication that has been assumed by the respondent or is indicated for the recipients (e.g., it is incomplete, it is a quotation, it is a metaphor).

Previous studies showed that the major kind of variables that distinguish between the expressive and the sharing kinds of communication styles are the variables of Types of Relation. These variables characterize two modes of communication: the objective interpersonally-shared kinds of communications and the personal-subjective communications. The former includes expressions in the form of propositions describing qualities or actions, and comparisons including descriptions of similarities, differences, relationalities and complementary relations. In contrast, personal-subjective types of relation include exemplifying-illustrative description of examples, situations or scenes, as well as interpretational, metaphoric (conventional or innovative) and symbolic relations.

These differences are based on studies in which subjects were requested to communicate interpersonal or personal communications (Kreitler & Kreitler, 1990). Studies showed that individuals whose communications, in general, were based primarily on the interpersonally-shared types of relation focused on objective descriptions or factual data and avoided expressions of personal attitudes, emotions, and evaluations. In contrast, those whose communications in general were based primarily on the personal-subjective types of relation tended to express more their personal views and attitudes, including emotions, experiences, and thoughts.

## **2.2. Kinds of motivations for communication: The cognitive orientation approach**

Style is however a characteristic of the communication itself. The determinants of style reside in the communicator and in the addressee. In regard to the communicator, we focused on his or her motivation to communicate in the shared or withdrawal kind of style. The communicator's motivation was conceptualized and assessed in the framework of the cognitive orientation (CO) theory (Kreitler, 2004, 2014b; Kreitler & Kreitler, 1982), which assumes that motivation is a function of beliefs that may not be completely conscious and may form a motivation which differs from one's conscious intention. According to the CO approach, behavior is a function of a motivational disposition which is implemented by a behavioral program. The motivational disposition is a vector defined by the following four belief types: about oneself (i.e., one's habits, feelings), general beliefs about others and reality, beliefs about rules and norms (i.e., how things should be), and beliefs about goals and wishes (i.e., how one would like things to be). The four belief types do not refer directly to the behavior in question but to

its underlying meanings (called themes) which are identified by a systematic standard stepwise interviewing process carried out with pretest subjects. A previous study supported the validity of the described procedure for predicting expressive communicability in schizophrenics and healthy individuals (Kreitler, Schwartz, & Kreitler, 1987). In the present study.

### **2.3. The Gender of the communicator and of the addressee**

A large body of research demonstrated the difference between men and women in communication styles. Salient differences have been detected for example in the content emphases which in men tend to refer to status implications and differences between themselves and others while in women they focus rather on interpersonal connotations based on interdependence (mutual dependence), similarities, and cooperation. Further, women tend to express more their personal point of view, show their attention in listening and use in communication more nonverbal means (Disch, 2009; Mortenson, 2002; Steckler, & Rosenthal, 1985; Tenenbaum, Ford, & Alkhedairy, 2011; Von Hippel, Wiryakusuma, Bowden, & Shochet, 2011; Wood, 2001). It was assumed that the communication style may be affected not only by the communicator's gender but also by the gender of the addressee (Almushayqih, 2020; Carli, 1999; Gray, 1992; Mulac, Bradac, & Gibbons, 2001; Tanner, 1990). Hence, In the present study both the gender of the communicator and of the addressee were considered.

## **3. OBJECTIVES**

The present study examines the role of the following three factors in the context of communication: the gender of the communicator: man or woman; the gender of the addressee: man or woman; the motivation of the communicator: sharing or withholding. Each of the three variables is represented by two values. The dependent variable is the communication style, i.e., the degree to which it is shaped along the lines of the interpersonally-shared mode of meaning or the personal-subjective mode of meaning. The hypothesis was that the communication style is a function of all three factors – i.e., the gender of the communicator, the gender of the addressee, and the communicator's motivation. The communication style was expected to be more interpersonally-shaped when the communicator is a man, the motivation is withholding and the addressee is a man. It was expected to be more personally- subjectively shaped when the communicator is a woman, the motivation is sharing and the addressee is a woman.

## **4. METHOD**

The study was an experimental one with three variables as predictors (the gender of the communicator, the gender of the addressee, and the communicator's motivation) and one variable as a dependent (the communication style).

### **4.1. Participants**

The subjects were 70 undergraduates in the behavioral sciences, including an equal number of men and women. They were in the age range of 21 to 25.

### **4.2. Design**

The design of the study was a three-factor design. One factor was the CO motivation of the communicator: sharing information versus withholding information, whereas the second and third factors were the gender of the communicator and of the addressee: male versus female.

### 4.3. The experimental task

The communication referred to the description of a weekend excursion by a family of four in the course of which the 4-year-old child fell and was badly hurt. The experimental task was to communicate the story to a hypothetical male or female.

### 4.4. Tools

The motivation was assessed in terms of the CO approach (Kreitler & Kreitler, 1982) which assumes that motivation is a function of beliefs which may orient towards sharing and self-disclosure or towards withdrawal and distancing oneself from others. The CO-based motivation was assessed by means of a CO questionnaire which included 40 statements: 10 for beliefs about self, 10 for general belief, 10 for norm beliefs, and 10 for goal beliefs. Responses were to be given by checking one of four presented alternatives, ranging from Very true to Not true at all, scored as 4 to 1. In each belief type half of the items are oriented towards withholding and half towards sharing. The subject got for each belief type only one score that represented the summed directions of the two kinds. The contents of the beliefs represented themes supporting sharing (e.g., expressing one's feelings has a relaxing effect, disclosing one's attitudes is important for making friends, sharing information may help for getting the support of others) or withholding information (e.g., trusting others may be dangerous, it is never helpful to let others

know your real thoughts, sharing information may cause others to exploit your weakness). Each subject got four scores: one for beliefs about self, one for general beliefs, one for norm beliefs, and one for goal beliefs. The reliabilities of each of the four scores in terms of alpha Cronbach ranged from .79 to .85. (Kreitler, 2021b, chapter 5).

The style of communication was assessed in terms of the Kreitler meaning system which enables characterizing the degree to which the communication is based on types of relation characterizing one's use of the objective interpersonally-shared mode of communication or the personal-subjective one. The style of communication consisted in scoring the narrative referring to the experimental task (see 4.3).

The following six types of relation define the objective interpersonally-shared mode of communicating: attribute-describing qualities (e.g., he is a nice person), attributive describing actions (e.g., she helps others), comparative-similarity (e.g., love is like happiness), comparative-difference (e.g., helping differs from punishing), comparative-relational (e.g., a scratch is less than a wound), comparative-complementary (e.g., crying weakens through being comforted). The following six types of relation define the subjective personal mode of communicating: exemplifying instance (e.g., the boy is for example a four-year-old), exemplifying situation (e.g., pain – a person bent over with pain), exemplifying-scene (e.g., when you fall everyone comes to you to help you get up and the ask you how they can help), metaphoric-interpretation (e.g., pain is the unavoidable lesson of life), metaphor- conventional (e.g., to be happy is like being in the seventh heaven), metaphor-original (e.g., joy is like swimming in sweet light), metaphor-symbolic (e.g., love is like a beautiful flower with golden petals covering painful thorns). Each narrative of the task got first two scores: one for the number of types of the relation of the objective style and one for the number of types of the relation of the subjective style. Each response of one of the variables in each of the two modes got one point.

Since in the beginning, most subjects used a mixture of both kinds of styles, reflected in similar scores for the two modes of meaning (i.e., less than half than 1 SD), in the preliminary stage of the analysis of results an additional dependent variable of the study was defined as the time (in seconds) it took the subject to settle on the style which consisted in at least 75% of one style (i.e., either objective or subjective). (For the inter-rater reliability see Procedure).

#### 4.5. Procedure

After signing the consent form, each subject related the story only once – to a female or a male. The determination of the addressee was random. There was no time limit for relating the story. The recorded stories were analyzed by two independent judges in terms of the style of communicating. In cases in which differences in ratings between any two judges exceeded two points, a discussion between the raters was used for deciding on a concordant rating. Thus, the degree of correspondence between the two ratings for all recorded stories was high (see Tools). The mean correlation between two independent raters was .70.

### 5. RESULTS

The data was in regard to the time it took to get to the dominant communication style was analyzed by the Cox proportional-hazards model which is a regression model enabling studying the association between several predictor variables and the time it takes for a phenomenon to occur. In the present study, the predictor variables were the scores in the four types of beliefs representing the communicator’s motivation and the gender of the communicator and of the addressee. In this analysis, the dependent variable was the time it took for the subject in the study to get to the point of 75% of types of the relation of one of the styles of communicating. It was expected that the subject whose CO scores indicate the motivation for sharing would settle sooner on the style of sharing, while the subject whose CO scores indicate the motivation for withholding would settle sooner on the style of withholding. The manifestation of the styles was expected to be affected also by the gender of the communicator and of the addressee.

Table 1.

*Results of Cox proportional hazards model with motivation for communication and gender of the communicator and of the addressee as predictors and speed of settling on one’s style of communication as a dependent variable.*

Predictors	B	SE	Wald	P
Motivation: norms	-.974	.397	6.142	.013
Motivation: beliefs about self	-2.199	.414	31.311	.000
Motivation: goals	-.096	.224	.147	.681
Motivation: general beliefs	-.918	.398	5.321	.021
Gender of addressee	.522	.219	5.608	.030
Gender of communicator	-.472	.188	.152	.591

$$\chi^2 (1, 4) = 8.664, p = .018.$$

The findings in Table 1 show that the following three predictors that constitute the motivation for communication had significant contributions: beliefs about norms, beliefs about self, and general beliefs. The highest contribution was by beliefs about self. The contribution of beliefs about goals was not significant. The effect of the gender of the addressee was significant, but the effect of the gender of the communicator was not significant. The whole model was found to be significant.

Table 2 presents the results concerning the communication style with the following predictors: the communicator’s motivation, and the gender of the communicator and of the addressee.

*Table 2.*  
*Results of a regression analysis with motivation for communication and the gender of the communicator and of the addressee as predictors and score on one’s communication style as a dependent variable.*

	Unstandardized Coefficients		Standardized Coefficients	t	P
	B	Standard Error	Beta		
Constant	2.252	.337		6.674	.000
Motivation: Beliefs about self	.767	.095	.357	8.094	.000
Motivation: General beliefs	-.394	.113	-.199	-3.482	.001
Motivation: Norm beliefs	-.189	.129	-.087	-1.463	.144
Motivation: Goal beliefs	.263	.125	.107	2.108	.036
Communicator: gender	.267	.064	.201	3.171	.002
Addressee: Gender	-.024	.065	-.020	-0.351	.526
Communicator: Gender X norms	.246	.077	.192	3.308	.001

F (5, 65) = 26.594, p < .001, R = .459, R<sup>2</sup> = .210

The results in Table 2 show that the following three kinds of beliefs had significant contributions: beliefs about self, general beliefs, and goal beliefs. The most significant contribution was made by beliefs about self. The contribution of beliefs about norms was not significant. Additionally, the contribution of the communicator’s gender was significant, but not that of the addressee. However, there was one significant interaction between the communicator’s gender and norms. The interaction indicates that when the communicator was male the norm beliefs of the CO motivation contributed significantly to predicting the communication style. The results supported the hypothesis that the communication style depends on the communicator’s motivation and the gender of the communicator. The whole model was significant and accounted for 21% of the variance.

## 6. DISCUSSION

The results showed that the speed with which the communication style became dominant and clearly manifest was predicted by the belief types of the CO motivation for communication and the addressee’s gender. The three belief types which predicted the speed of manifesting the communication style were beliefs about self, general beliefs, and norms. Additionally, also the gender of the addressee had a significant contribution to the prediction.

However, when the dependent variable was the dominant communication style the predicting belief types were beliefs about self, general beliefs, and goal beliefs. Additionally, the prediction was supported also by the gender of the addressee and by the interaction between the communicator's gender and norm beliefs. The results indicated that the most potent predictor of the communication style was the communicator's motivation, further modulated by the communicator's gender which brought into play also the norm beliefs. Thus, when the CO of motivation supported withholding and the addressee was a man the communication style was mainly of the objective kind, and when the CO of motivation supported sharing and the addressee was a woman, the communication style was mainly of the subjective kind.

Other cases were matched by communication styles of mixed kinds, manifesting the different possibilities of cooperation between the different factors.

The fact that only three belief types had significant contributions to predicting the duration preceding the manifestation of the communication style and of the communication style itself does not disconfirm the major tenet of the CO theory, according to which the support of only three belief types suffices for shaping a course of behavior (Kreitler & Kreitler, 1982). Thus, the findings support the hypothesis about the role of CO predictors in regard to communication style.

The fact that in both predictions beliefs about self had the largest contribution may suggest the importance of this belief type which reflects the self-image in determining and guiding the formation of the motivational disposition, at least in the two cases examined in the present study. Notably, goal beliefs played in this context a relatively small role as attested by the fact that it had no significant contribution in regard to predicting the time duration of until the dominant communication style appeared and had the relatively lowest contribution to predicting the kind of communication style. The reason may be that the communication style assessed in an experimental situation concerns primarily the present situation rather than goals for any future ones.

Norm beliefs had an intriguing role in this context. In regard to predicting the duration until the appearance of the dominant communication style norm beliefs had a definite and significant role. However, in regard to predicting the kind of communication style, the role of norm beliefs appeared only in interaction with the gender of the addressee. Hence the implication is that the role of norm beliefs was modulated by considering the gender of the addressee. Hence, it was shaped in line with the presented situation.

Concerning the effect of the gender of the interacting agents, the results show that it is a function of the context. Thus, when the predicted variable is the duration until the communication style appears clearly, then it is the gender of the addressee that has a significant effect. It is as if the communicator dwells on the nature of the addressee weighing the likely response of the addressee to the manifestation of the communication style. But when the issue is selecting the communication style, then it is the gender of the communicator that dictates the step to be undertaken, in view of norm beliefs. It is as if the communicator considers what is appropriate or expected of himself or herself in view of one's gender.

## **7. CONCLUSIONS**

A major conclusion of the study is that the communication style is affected by the communicator's motivation. The findings show that applying objective and subjective communication styles is a function of one's beliefs about issues that do not refer directly to communication in general or degree of disclosure or withdrawal of information but only to

the meanings underlying communication, disclosure, and sharing. The communicator is not aware of the connection between one's beliefs and one's communication style and there is no reason to assume that he or she try to adapt their communication style to their beliefs. The impact of the beliefs on the communication style is neither conscious nor under the communicators' voluntary control.

The findings also indicate that in each case at least three of the belief types have significant contributions, although the specific amount of their involvement in the prediction is a function of the context.

Another conclusion of the findings is that each communicator disposes of the two studied communication styles. The activation of one or another is determined among other factors by one's CO motivation supporting one or another of the communication styles. Hence, if one desired to affect the activation of these communications styles the recommended way is by enriching or enhancing the meanings underlying these styles. This procedure is likely to be much more effective than training one or another of the communication styles. The conclusions of the study provide support to the objectives by demonstrating that all three factors significantly impact the style of communication.

It may be assumed that the same conclusions apply also to other communication styles in which one may be interested. The recommended procedure of affecting them is the indirect way of dealing with their underlying meanings which is likely to be more effective in regard to most behaviors than reinforcing directly the behaviors themselves. The reason is that the behaviors are actually grounded in the underlying meanings so that changing the meanings is easier than manipulating the behaviors and is likely to be for a longer duration.

Additional conclusions refer to the role of the gender of the interacting individuals. The results indicate that the impact of the gender of the communicator or of the addressee depends on the predicted variable. When the predicted variable is duration until the manifestation of the communication style then it is the gender of the addressee that has a significant contribution but when the variable is the communication style itself then the communicator's gender is of large importance.

## **8. FUTURE RESEARCH DIRECTIONS**

The reported study opens new vistas of studying communication styles in context. The major future directions indicated by the findings concern the communication styles and the themes used for testing them. The first step should be taken in regard to extending the range and kind of narrated themes. Further, it is of importance to extend the examination and characterization of the communication styles to the contents, as manifested for example in terms of the other aspects of the meaning system, namely, meaning dimensions, forms of relation, referent shifts, and forms of expression. Further, in regard to the gender of the communicator and addressee, it is advisable to study the effects of their matching so that a man communicating to a woman should be compared to the narrative of a woman narrating to a man. A most important extension that is recommended is to examine the impact of other communication styles in addition to those examined, for example, the passive, the manipulative, the aggressive, and the assertive communication styles.

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**Section 6**  
**Legal Psychology**



## Chapter #27

### HOW DOES PRIOR KNOWLEDGE AFFECT CHILDREN'S MEMORY AND SUGGESTIBILITY?

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#### ABSTRACT

In this review chapter, we analyzed various studies focused on the effect of prior knowledge on children's memory and suggestibility. Specifically, three types of knowledge are considered: *social knowledge*, *script knowledge* and *semantic knowledge*. Social knowledge benefits memory when the actions performed by another person fit into children's knowledge, but it is also probably that children accept false suggestions consistent with that knowledge. Script knowledge is only beneficial for memory when the repeated event occurs always in the same way, but when some details change across repetitions, children could become confused and not be able to distinguish the particular detail in each repetition of the event. Semantic knowledge benefits episodic memory and makes more probably to reject false suggestions, unless the suggestion were repeated many times, in this case the beneficial effect of semantic knowledge disappears. Findings from studies are extrapolated to the forensic field, and limitations of the studies analyzed are discussed.

*Keywords:* prior knowledge, children, memory, suggestibility.

#### 1. INTRODUCTION

Every year an increasing number of children are involved in criminal cases, mainly in cases of alleged sexual abuse. Under these circumstances, young children must testify about the alleged actions supposedly carried out by another person, usually a familiar adult (e.g., a parent, a close relative, a teacher). Very often, the child's testimony is the only evidence against the suspect, and the case has to be judged based on the credibility of the statement of the minors. For that reason, it is important to obtain a reliable and complete statement from children involved in legal cases.

Due to the relevance of this topic in the forensic field, research has focused on understanding the benefits and harms of factors that affect the accuracy of children's testimony and their vulnerability to suggestions. There are individual differences that could be responsible, along with age, for memory and suggestibility in young children, such as narrative style, intelligence, prior knowledge, theory of mind, etc. (for a review, see Klemfuss & Olaguez, 2018). Specifically, in this chapter, we focus on one of those factors, namely, the effect of prior knowledge on children's memory and suggestibility.

##### 1.1. Prior knowledge

Bartlett (1932) claimed that everything we remember is highly affected by the knowledge schemas that we already have, which are continually being updated from personal experiences of recurrent situations. Initially, children's schemas are not well developed, and they have rigid schemas of events. However, these schemas develop progressively with

experience and acquisition of new knowledge, they become more abstract (Hudson, Fivush, & Kuebli, 1992; Nelson, 1978) and contribute to the encoding, retention, and retrieval of information of the events that we experience.

Thus, knowledge schemas are intuitively thought to support accurate memories of episodic details, they help children make inferences to understand situations, process discrepant information between past and present experiences in an elaborate way, and children can use schemas as a framework for retrieving their experiences (Goodman, 1980; Schank & Abelson, 1977). However, schemas can also impair memory for episodic information, distorting what children have actually perceived. For example, children may believe that something happened because it fits into their schema of the situation, but in reality, it did not happen (Hudson & Nelson, 1983). Additionally, it is thought that knowledge schemas could protect children from external suggestions: when someone tries to suggest false information inconsistent with the schema, children elaborately process it and may reject it later (Hudson, 1986). However, when false suggestive information is consistent with the schema, it is more difficult to reject it, and children may incorporate it in subsequent reports (Leichtman & Ceci, 1995). Therefore, there seems to be a double effect of knowledge on children's memory and suggestibility: it improves or impairs memory, and it facilitates or makes difficult the acceptance of suggestions.

In this chapter we focus on three types of knowledge that could be relevant in some cases in the forensic field (Ceci & Bruck, 1995): (a) social knowledge (i.e., stereotypes), (b) script knowledge, and (c) semantic knowledge.

*Social knowledge* refers to knowledge schemas about people and their behavior, it is what we know as *stereotypes*, whereas script and semantic knowledge are related to knowledge about situations or events. In the case of *script knowledge*, it is a knowledge schema formed from recurrent situations that could become a routine and it includes a sequence of actions (e.g., the restaurant script), while *semantic knowledge* is a more general event representation or general knowledge about a situation or event (e.g., what a person knows about restaurants in general, regardless of whether or not that person has been to a restaurant).

These three types of knowledge could be relevant in sexual abuse cases because they may influence children's memory, and in consequence, their statements. To assess the testimony of an alleged victim of sexual abuse, the forensic psychologist has to know what has happened, and for this, he or she needs to obtain information about the alleged perpetrator, what he did and what the child did, and how both carried out those actions, how many times the abuse occurred (if it has occurred more than once), when and where occurred, etc. Therefore, the minor must provide the psychologist with very specific information about the alleged facts. Thus, when talking about the perpetrator of the alleged abuse and the actions he took, the child's social knowledge could influence his or her memory and, in that sense, if the child has a negative stereotype about the alleged adult ("that person does bad things"), his or her memory could be skewed by attributing more negative actions to the adult than they actually were, or transforming positive actions that occurred into negative ones, or even attributing new negative actions to the adult. Additionally, if the alleged abuse occurred multiple times and became part of a routine, then the child's script knowledge could be influencing his or her statement. In these cases, child is often questioned about a specific episode of the repeated abuse (sometimes about the last or first occurrence, other times about the episode that he or she better remember) and the child may confuse details from one episode with details from a different episode.

Lastly, it should be noted that young children are expected to lack knowledge of a sexual nature unless they have been victims of the alleged abuse. Therefore, any detail contained in the child's statement about the alleged abuse is believed to come from the child's direct experience, not from his or her prior knowledge (i.e., his or her semantic knowledge about sex). However, some of the details and actions contained in the child's statement could come from a variety of informal and formal sources of suggestion (e.g., parent and professional questionings). Thus, a forensic psychologist must be very careful when analysing the statement of a minor: the professional must examine whether the minor had sexual (semantic) knowledge before the abuse was disclosed and carefully analyse the possible sources of suggestion to which the minor could have been exposed during the process, because from those sources the child could have obtained semantic knowledge about sex. Furthermore, simultaneously, the professional has to take into account the other two types of knowledge (stereotypes and scripts) that could be also influencing the child's testimony.

The results of studies interested in how these three types of knowledge affect children's memory and suggestibility are analyzed below. The authors who have address this issue have included participants whose ages ranged from 3 to 11 years in their studies.

## **2. SOCIAL KNOWLEDGE: STEREOTYPES**

The term *social knowledge* refers to the schemas that people have about others and their typical characteristics of personality and behaviour. In the forensic field, in most cases, children have to testify about the actions performed by another person. Sometimes, that person is a stranger adult. How children speak about these actions can be affected by their social knowledge about the person involved in the crime. Sometimes, social knowledge changes after the child has interacted with the adult. This could happen when the child discloses the alleged abuse, and someone transmits to the child a negative characterization of the defendant and/or of the actions performed by him or her. This stereotype induction can have a powerful negative effect on the accuracy of children's statements because naïve children may incorporate that negative stereotype in their subsequent reports regardless of what truly happened (Ceci & Bruck, 1995).

In the studies reviewed, social knowledge was manipulated through a story with a stereotyped description of the protagonist (a stranger adult). A negative stereotype was induced in only half of the participants (Cordón, Silberkleit, & Goodman, 2016; Elischberger, 2005), or a negative, a positive, or a neutral stereotype was induced in all participants (Greenhoot, 2000; Leichtman & Ceci, 1995; Memon, Holliday, & Hill, 2006). After providing the description, an event took place or a story was read, and children between 3 and 6 years old observed the protagonist performing a set of actions or listened to a narration about the protagonist, respectively. Later, participants received suggestive information<sup>2</sup> through suggestive questions. Last, in all the studies, children completed a final memory interview for the event observed or story heard.

The results showed that the stereotype induced did not affect the overall memory about the event or the story. In fact, stereotype only affected children's memory when stereotype information was specifically evaluated. Thus, the protagonist's actions consistent with the stereotype induced had a greater probability of being remembered and reported than the inconsistent ones. Thus, social knowledge (i.e., stereotype) seemed to guide and bias the children's attention towards the protagonist's behaviour consistent with the stereotype (Ceci & Bruck, 1995; Leichtman & Ceci, 1995). Moreover, if participant's knowledge was manipulated again (as in Greenhoot's study, 2000), the recall of actions in a subsequent

memory interview was modified as a function of the second stereotype induction. Thus, if children had received positive knowledge in both interviews, they provided more positive than negative information in the second memory test. However, if they received positive knowledge in the first interview but negative knowledge in the second interview (suggestive), their recall for the actions was modified according to the suggestion received, and they provided more negative than positive information in the second interview. The inverse pattern was also true. Regarding suggestibility, the results showed that children who received a stereotype, especially younger children (3 and 4 y-o), committed more intrusions and made more inferences than children who did not receive it. These results were heightened when children were exposed to a suggestive interview that introduced false suggestions consistent with the stereotype given to them.

From these studies, four conclusions can be reached: (1) prior social knowledge has no effect on the overall memory of an event; (2) children with positive or negative prior social knowledge about a person are more likely to provide information of actions consistent with that knowledge when their memory is tested; (3) prior social knowledge is detrimental when false suggestions about actions consistent with that knowledge are given because children are more likely to accept them and may even embellish their reports with inferences based on that social knowledge; and (4) when children have prior social knowledge and a stereotype is subsequently given, the children revise and modify their recall of the actions and report actions consistent with their new social knowledge.

Concern for social knowledge in real cases arises when a young child is going to testify. What the minor relates when she or he reveals the alleged abuse will probably be influenced by her or his social knowledge about the abuser; but it is also very likely that after the disclosure of sexual abuse, the child receives stereotypical negative information about the alleged abuser through biased questions from a concerned parent or professionals. The modification of the child's knowledge about the alleged abuser could be very harmful because, as indicated above, his or her testimony would be most likely consistent with the recently induced negative bias.

It should be noted that in none of the studies described was the protagonist familiar<sup>3</sup> with the children, nor did they directly interact with him. The children only observed or listened to a narration about the actions performed by the protagonist. However, in cases of sexual abuse, the adult is usually a familiar adult, and he or she directly interacts with the child. Therefore, more research is needed to examine the effect of children's prior social knowledge when children have to recall a situation in which there has been direct interaction between them and a close adult.

Next, studies interested in how script knowledge affects memory and suggestibility in children are described below.

### 3. SCRIPT KNOWLEDGE

We often live experiences that consist of a typical sequence of actions, which are part of script schemas (e.g., visit the doctor, go to a restaurant, etc.). These scripts are an abstract knowledge structure hierarchically organized that reflects our understanding of the temporal and causal sequence of actions that typically occurs in some contexts (Schank & Abelson, 1977). For example, the script "go to the restaurant" is hierarchically organized, so that, the event comprises a series of general or abstract *activities* (e.g., order the food), which in turn comprises a series of specific *actions* (e.g., the waiter arrives, and we order the drink, we order an appetizer, we order the main dish, and we order the dessert), and those actions are

carried out on objects (e.g., we order some *water* to the waiter, we order *meat*, we order a *cheesecake*, etc.). Every time we go to a restaurant some of the actions or objects could change (i.e., *variable details*: we call the waiter instead of waiting for him to come to our table, we order *fish* instead *meat*, etc.); whereas others remain unchanged (i.e., *fixed details*: in a restaurant we always order some food). Thus, the events that repeat over time tend to include some variations, and those variations are expected because it is unusual that we experience the event always in the same way.

We all generate scripts because they make it easier for us to remember what usually happens in certain situations and contexts and help us to generate an episodic representation of our experiences (Schank & Abelson, 1977). Young children also generate scripts, although at the beginning they have rigid event scripts and they represent their scripts rather in terms of actions and objects than abstract or general activities (Hudson et al., 1992). In fact, research shows that there are developmental differences in the children's organization of the event's knowledge and suggests that young children are very often dependent on the scripts of the events they experience when they try to remember an autobiographical event, causing them to confuse different instances of the same event (Hudson et al., 1992).

The studies reviewed in this section are characterized by the fact that script knowledge is generated during the study itself, that is, by repeating sessions, participants generate a script about what usually happens in the sessions and what is the sequence of actions and objects expected during the course of the sessions.

In this line, to understand the process of script acquisition, Farrar and Goodman (1990, Exp. 1) carried out a study where participants (4 and 7 years old) repeated a set of games during three sessions (called "script visit") and in another different session there were changes in the activities (called "episodic visit"<sup>4</sup>). That "episodic visit" could be the first or the last session in the study. One week after the last session, children were interviewed about the sessions with a *free recall* test and a *contextual recall* test<sup>5</sup>. The overall recall of the event was higher for the script visit than for the episodic visit, and 7 y-o children remembered more activities than 4 y-o children. Regarding the episodic visit, younger children made more inference mistakes than older children because they based their recall on script knowledge instead of their episodic or contextual memory of the visit. However, these mistakes were reduced when the episodic visit was the last session of the four sessions.

Therefore, these results seemed to indicate that script knowledge was beneficial for memory because it improved the overall memory of the event. That is, memory performance was greater when children had this type of knowledge. Additionally, young children seemed to draw on that knowledge to describe their experiences. However, script knowledge could also impair young children's memory, especially when some details varied in different replays of the event. In that situation, young children had serious difficulties in determining in which of the specific instances of the event the change occurred. As we previously pointed out, in some criminal cases forensic interviews are about events that occurred repeatedly (e.g., repeated sexual abuse), and when children testify, they are questioned for details from a specific instance of the repeated experience (usually about the last time the abuse occurred). As we mentioned above, children have difficulties to distinguish between instances of the event, and due to its relevance to the forensic field, subsequent studies have continued to focus on the effect of script on memory and, furthermore, on the acceptance of suggestion.

In the studies described below, participants usually carried out a set of activities in which (a) details were *different* in each repetition or (b) there were *fixed* and *variable* details through the sessions. It is interesting to establish this distinction because in real cases of alleged sexual abuse repeated over time, it may happen that some details about the abuse are always the same (e.g., the abuse always occurs in the home of the minor, is committed by the

same aggressor, etc.), but other details vary (e.g., where the abuse occurs –bedroom or bathroom-, or when the abuse occurs –daily days in the afternoon and weekends in the morning-, etc.). Exceptionally it could also happen that the details are different for each of the times the abuse occurs.

The studies analyzed include two groups of participants. One group repeated an event in at least four sessions (script knowledge group), and the other group experienced the event only in one session (episodic experience group). After the last session (or the unique session), all children completed a delayed suggestive interview about the target session (i.e., one of the experienced sessions for the script group and the single experienced session for the episodic group). Suggested details could come from an instance other than the target session. For example, in the target session children were sitting on a *cardboard*, but the suggested detail indicated that children were sitting on a *rubber mat*. Actually, children were sitting on a *rubber mat* in a different session than the target session. Moreover, in some cases, the detail could be completely new (“children sat on a *bed*”, although in none of the sessions did the children sit on a *bed*). Finally, all participants completed a final memory interview (*free recall test*, *cued recall test*, and/or *yes-no questions*<sup>6</sup>) about the target session. Next, we describe in two blocks the results found in the studies: (3.1) studies that used different details in each repetition, and (3.2) studies with fixed and variable details throughout the sessions.

### 3.1. Different details in each repetition

In these studies (e.g., Connolly & Price, 2006; Powell & Roberts, 2002; Powell, Roberts, Thomson, & Ceci, 2007; Price, Connolly, & Gordon, 2016), the same central activities were included in all sessions, but for the children who participated in the repeated experience, the instances of the activities were different in each session (e.g., child sat on “x”, “x” in one session was a *cardboard*, in others a *rubber mat*, a *garbage bag*, or a *white sheet*). Although the specific details were different in the sessions, however, children could develop a script of the typical sequence of activities that were part of the repeated experience in the sessions. This type of repetition attempted to determine whether children with a repeated experience could accurately identify a specific detail from one of the sessions (i.e., the target session) because in legal cases, children must. Across the studies reviewed, the ages of the participants ranged from 3 to 8 years.

The results demonstrated that when details changed in each session for the script knowledge group, overall correct recall was higher for children with a unique experience (i.e., episodic experience) in short delay conditions (suggestion was provided three days or one week after the last session) compared to children with repeated experience and long delays (three or four weeks). Furthermore, children with repeated experience (i.e., script knowledge) also committed more mistakes because they could not distinguish between details from specific sessions. Lastly, suggestion was more frequently accepted after a long delay (three or four weeks after the last session) and when it was consistent with children’s knowledge or it was related to a detail that could be part of a different session from the target session (e.g., the detail suggested was “children sat on a *rubber mat*”, when in the target session they sat on a *white sheet*).

If we examine these results more closely, when a victim suffers a sexual abuse that varies over time, it could be expected that his or her memory for a concrete occurrence will be very poor and the victim could easily confuse the instances of the repeated experience. Moreover, the delay between the occurrence of the abuse and the forensic interview can be long in real cases. Thus, it seems that having a script knowledge about the event does not prevent the acceptance of suggestion consistent with that knowledge, but rather the opposite, the minor would be especially vulnerable to suggestion when it is consistent with his or her

script of the abuse. However, it is necessary to point out that we found certain problems in generalizing the results of these studies to real cases, since in the most typical cases of abuse, it is unusual for the details related to the abuse to change systematically from one replay to the next, but rather certain details may change (i.e., variable details), but the core of the details remain unchanged (i.e., fixed details) throughout the replays.

### 3.2. Fixed and variable details in all sessions

In this case (e.g., Danby, Sharman, Brubacher, & Powell, 2019; Connolly & Lindsay, 2001; Powell, Roberts, Ceci, & Hembrooke, 1999; Roberts & Powell, 2007), central activities were the same in all sessions, but for participants in the repeated experience condition, the instance of the critical detail could be the same (fixed detail: the child always sat on a *cardboard*) or different (variable detail: the child sat once on a *rubber mat*, other times on a *white sheet*, others on a *newspaper*, etc.). Thus, children could develop a script of what typically happened in these sessions, although some details might not always be the same. Across the reviewed studies, the ages of the participants ranged from 3 to 9 years.

When memory for activities was analysed, the recall of the fixed details was higher for children with repeated experience than for children with a unique experience. However, for the variable details, results were inconsistent because sometimes a higher recall was found in the unique experience group than in the repeated experience group, whereas other times there was no difference between both groups. Additionally, when the delay between the last session and the suggestive interview was short (three days), recall of both types of details (fixed and variable) was greater compared with a long delay condition (three weeks). Nevertheless, false fixed details were more accepted by children with a unique experience than repeated experience, but the opposite result was true for false variable details. Furthermore, both false fixed and false variable details were more accepted after a long delay (three weeks after the last session) than a short delay (three days).

Therefore, in this procedure, it seems that having script knowledge was beneficial when in a repeated session there were fixed details because these were part of the script and were well remembered. Indeed, children were more likely to reject the suggestion of false fixed details because they realized that those details did not belong to their script. However, this script knowledge was not very helpful in sessions with variable details because those details were not part of the script and children could be confusing the real origin of the details, which made children more vulnerable to suggestions about these details, especially when suggestions were consistent with their scripted knowledge.

The problem arises in the legal field, since professionals do not know whether alleged repeated abuse has fixed or variable instances, and they cannot know how that abuse supposedly occurred until the child discloses it. Therefore, professionals need to be careful with children's testimony because what children tell them could be part of an instance of the repeated event or a mix of various instances. However, it should be noted that in real cases of abuse repeated over time, fixed and variable details do not appear decontextualized. In fact, the variable details of continued abuse over time depend on the space-time context in which the abuse occurs, often leading to additional variations in the sequence of victim-abuser interaction. For example, whether the abuse occurs in the child's room, the child and the adult may be lying in bed, but if on another occasion the abuse occurs in the bathroom at the time of the shower, the position and interaction between them must be different. Therefore, it is necessary research that delves into the variation of the details but placing them contextually in the development of the sequence of the general activities and specific actions and objects of the script.

#### 4. SEMANTIC KNOWLEDGE

Last, in this section, we refer to research that assesses children's memory and suggestibility for an episodic event when their performance could be affected by semantic knowledge. In the studies reviewed, children participated individually in an episodic event and had prior semantic knowledge to a greater or lesser extent about the event. Next, participants completed two interviews.

Taking advantage of the fact that the children were going to undergo a medical check-up, Ornstein and colleagues (Ornstein, Gordon, & Larus, 1992; Ornstein et al., 2006) interviewed them about the checkup in two moments (immediate recall and delayed recall). In these studies, children could have a script of what usually occurs during medical check-ups. However, unlike in the studies of script knowledge, Ornstein and colleagues did not create that script knowledge through event repetitions, but it is spontaneously acquired by children's extra-experimental experience, so they considered it semantic knowledge rather than script knowledge. The results showed that correct recall was higher in older children (6–7 y-o) than in younger children (3–5 y-o), and it was greater in immediate interviews (i.e., after the event) than in delayed interviews (one or three weeks in one study, three or six months in the other). Moreover, older children were more prone to reject suggestions than younger children, mainly in immediate interviews. Therefore, it seems that older children benefited from their semantic knowledge of doctor visits; thus, they had better memory performance for the event (episodic memory) and were more resistant to suggestions about details and actions that had not happened.

On the other hand, Otgaar, Candel, Scoboria, & Merckelbach (2010) tried to find if prior semantic knowledge had any influence on false memories, for which they used the classic procedure of false memories implantation (e.g., Ceci, Huffman, Smith, & Loftus, 1994; Ceci, Loftus, Leichtman, & Bruck, 1994). In their study, participants (7 and 11 y-o) were interviewed twice about true events (i.e., events that occurred when children were 4 y-o) and false events that they never experienced. Regarding false events, children could have prior *low* (e.g., a rectal enema) or *high* (e.g., fingers being caught in a mousetrap) semantic knowledge. The results revealed that for true events the recall increased with the interview repetition, whereas the "recall" of false events remained similar for both interviews, although in the second interview a higher number of participants mentioned the false event spontaneously. Furthermore, for false events, children with high semantic knowledge about the false event (i.e., mousetrap) were more likely to create false memories in comparison with children with low semantic knowledge (i.e., rectal enema). Indeed, having high semantic knowledge made children more prone to embellish their reports.

Last, in the study conducted by Peláez, Pérez-Mata, and Diges (2019), 4 years old participants were divided in two groups, one group was presented with semantic knowledge about an unknown object (i.e., the object was shown to participants, but they did not directly manipulate the object), and another group of participants had an episodic experience with the unknown object (i.e., they were allowed to directly manipulate the object). Then, children were suggestively asked about true and false actions carried out with the object in two interviews separated by a week each other. The results showed that for "true actions", in the first interview, children with episodic experience could embellish more their reports than children with only semantic knowledge (note that for these participants the action was false because they were not given the chance to manipulate the object). However, this difference disappeared in the second interview because both groups provided the same amount of details for the "true actions". Regarding false actions for both groups, the acceptance of suggestion was higher in the second interview than in the first interview, and the embellishment of the

participants' reports was greater in the second interview than in the first interview, although similar for both groups. Therefore, question repetition was harmful because children were provided with semantic knowledge through those questions, and children used that knowledge to artificially embellish their reports. Consequently, reports from children who had experienced the event and children who had not were very similar in semantic details, and it became difficult to distinguish them from each other.

In summary, the results obtained by the studies reviewed seemed to indicate that semantic knowledge benefited the recall of episodic events. However, the influence of semantic knowledge on suggestibility was not clear. Sometimes, its influence was positive because semantic knowledge made it easier to reject false details about the event (Ornstein et al., 1992; Ornstein et al., 2006). However, semantic knowledge was not always helpful, especially when suggestive interviews were conducted and children were questioned repeatedly about false details or events (Otgaar et al., 2010; Peláez et al., 2019).

In real cases, the problem arises when children have been interviewed repeatedly. In that situation, when the interviewer asks the minor suggestive questions about the alleged abuse, the interviewer actually provides semantic knowledge about the abuse. Knowledge that the minor did not have until that moment but that when the minor acquired it, he or she could apparently include it "spontaneously" in his or her subsequent statements. Obviously, a victim is also not immune to the suggestion of the interviewer. Thus, both children with episodic experience (i.e., a victim) and those without episodic experience (i.e., not a victim) could add semantic information to their statements. Consequently, the statements of both children could be very similar, characterized by semantic information, and even the victim's statement could lose its episodic richness. Clearly, more research is needed to investigate the influence of semantic knowledge on children with or without episodic experience subjected to repeated suggestive interviews, as occurs in real cases.

## 5. CONCLUSIONS

Different types of prior knowledge affect memory and suggestibility in children. First, social knowledge has influence on children's memory about the actions performed by another person, in that sense if children have a positive stereotype they will remember more positive actions, whereas if they have a negative stereotype, they will remember more negative actions (Cordón et al., 2016; Elischberger, 2005). Indeed, if they are exposed to a suggestive interview, they will probably accept suggestions consistent with their social knowledge and incorporate them into their subsequent reports (Elischberger, 2005; Leitchman & Ceci, 1995). And, more important, if that prior social knowledge is modified after the event takes place, the children's memory may be affected, and children would modify their memory to fit that new social knowledge, usually a negative stereotype (Ceci & Bruck, 1995; Greenhoot, 2000).

Second, script knowledge is only beneficial when the event takes place always in the same way because then children are able to develop a script of what usually happens and remember well the event details (Farrar & Goodman, 1990). However, in real life repeated events have some changes in each repetition. When this happens and there are variable details in the instances, the script knowledge impairs children's memory because it is difficult to them distinguish between details from different instances of the event (e.g., Connolly & Price, 2006; Powell et al., 1999). Moreover, in this situation, children are more likely to accept suggestion about details that varies in different instances, especially when that suggestion is consistent with the script (e.g., Connolly & Lindsay, 2001; Roberts & Powell, 2007).

And, lastly, semantic knowledge appears to benefit the recall of episodic events and makes it easier reject suggestions (e.g., Ornstein et al., 1992). However, when suggestion is repeated over time, that benefit disappears and children accept that false information (Otgaar et al., 2010; Peláez et al., 2019).

However, as noted, more research is needed because some procedures interested in the influence of knowledge on memory and suggestibility have serious limitations to be generalized to real cases. Thus, research should be especially focused on:

- Changes in social knowledge (stereotypes) after children participate in the event instead before their participation, because in real cases the induction of a negative stereotype about the alleged abuser frequently occurs after the child discloses the abuse.
- The variation of the details in repeated events, considering the context in which the general activities and specific actions and objects of the script take place.
- The use of repeated suggestive interviews to compare the performance of children (a) with only semantic knowledge about an event; (b) with only episodic experience; and (c) with both semantic knowledge and episodic experience. This design would simulate different situations that could happen in real cases, and it would allow us to examine whether repeated questioning differentially affects semantic knowledge, episodic memory, and suggestibility.

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## FOOTNOTES

<sup>1</sup> This work is part of the first author's doctoral thesis project.

<sup>2</sup> In Greenhoot's study (2000) participants receive a memory test, and then a second knowledge manipulation was carried out that consisted of the induction of a new negative or positive stereotype, and then, the participants' memory was tested again.

<sup>3</sup> In the study by Cordon et al. (2016) the protagonist was familiar for some participants. Familiarity improved children's memory performance (children gave more correct responses and committed fewer commission errors) regardless of whether they had social knowledge about the protagonist or not.

<sup>4</sup> Authors referred to this condition as "*episodic visit*" because they examined how participants recalled a specific event that deviated from the repeated event (i.e., the *script event*).

<sup>5</sup> The *free recall* test was conducted in a different room from the game sessions and children were asked to report what they did in the games. However, the *contextual recall* was conducted in the same room where the children played the games, and the interviewer showed the children the game table (without the animal toys and props used during the prior sessions) and asked them to describe in order what happened at that table.

<sup>6</sup> The pattern of results was similar in the three memory tasks; therefore, we describe the results together.



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