

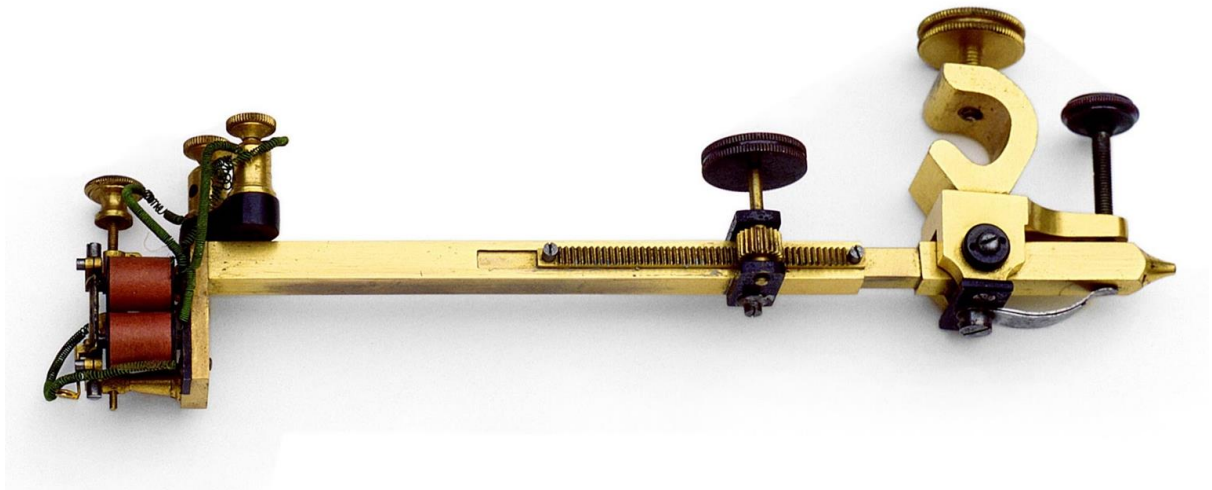
XXIX SCIENTIFIC CONFERENCE

# EMPIRICAL STUDIES IN PSYCHOLOGY

MARCH 31 – APRIL 2, 2023

FACULTY OF PHILOSOPHY, UNIVERSITY OF BELGRADE

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INSTITUTE OF PSYCHOLOGY  
LABORATORY FOR EXPERIMENTAL PSYCHOLOGY  
FACULTY OF PHILOSOPHY, UNIVERSITY OF BELGRADE

XXIX SCIENTIFIC CONFERENCE

# EMPIRICAL STUDIES IN PSYCHOLOGY

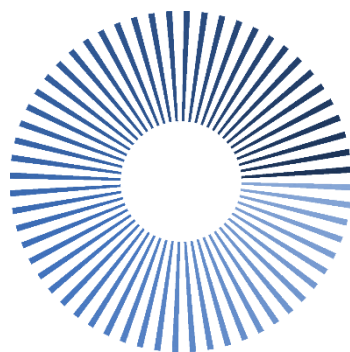
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INSTITUTE OF PSYCHOLOGY



LABORATORY FOR EXPERIMENTAL PSYCHOLOGY  
FACULTY OF PHILOSOPHY, UNIVERSITY OF BELGRADE

BELGRADE, 2023

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**Cover photo:**

Deprez time-marker (G. Boulitte, Paris)

Device for setting a fine time base for kymographic recording. It provides oscillations for intervals down to 0.005 sec. A pen is attached to the plunger of an electromagnet. The movements of the plunger may be varied with a conical regulator. The device now lacks the pen. The author of this device is French electrical engineer Marcel Deprez who conducted the first experiments to transmit electrical power (DC) over long distances. Dimensions: 18.5 x 4 x 4.5 cm; Net weight; 145 g; Voltage: V DC = 2 – 4 V

From the collection of old scientific instruments of the Laboratory of experimental psychology, Faculty of philosophy, University of Belgrade

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*KEYNOTE LECTURES*

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VISUAL ILLUSIONS AND RELATED PHENOMENA

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Our senses have the capability of very sensitive and detailed registration of various states and happenings in the environment, and thus provide an indispensable basis for successful coping and adequate action in the world. The complexity of this capability is reflected in the fact that a considerable portion of the cerebral cortex is dedicated to the reception and processing of sensory information. However, although the sensory systems are generally very successful in the fulfillment of their key biological role, there nevertheless also exist exceptions, that is, cases of discrepancy of objective reality and subjective impressions. In the domain of the visual sense such phenomena are usually called visual illusions, and they have for a long time attracted the attention of psychologists, philosophers and neuroscientists, as well as artists and the general public. However, discussions in the literature indicate that a more precise definition of this notion is not simple and that there are different conceptions of the nature of illusions, including views that they cannot even be defined properly. In the presentation it will be discussed, using many well-known as well as novel illustrations, on the basis of which criteria visual illusions could be defined more precisely and demarcated from related phenomena which have some but not all defining characteristics of classical illusions. Visual illusions may be present in very simple visual configurations which consist of only a few elements (lines or surfaces), whose positions, sizes, angles, colors, motions etc. are not perceived correctly. Such phenomena have been studied empirically for more than 150 years, not only as intriguing demonstrations but also using specific quantitative experimental techniques. The scientific interest of such studies does not consist in simply showing that the senses may occasionally deceive us, so that our impressions deviate from reality, but rather because the characteristic structure of these deviations, that is, for which stimuli, under what conditions, in which way and to what extent the senses make errors, provides valuable information about the nature of functioning of sensory systems, so that it can be said that 'visual illusions reveal visual truths' (Jan Purkinje, 1819). However, it can also be said that up to now they have only partially fulfilled their revelatory role. This is because although numerous and diverse theories have been proposed for different illusions over the course of many years, based on optical, anatomical, neural and cognitive mechanisms, many still lack generally accepted explanations. In contrast to various other psychological phenomena, 'the problem' with visual illusions is not that there is a shortage of reliable quantitative empirical data about them, but rather that there is a 'surplus', in the sense that it is not easy to construct an adequate theory which would take into account the mass of already established facts and explain them in a satisfactory manner. As a concrete example of a specific type of approach to explanations of illusions, a computational model of a group of salient illusions of perception of orientation will be presented, based on neurophysiological findings of reactions of retinal and cortical visual cells.

IMPROVING COMMUNICATION THROUGH SLEEPING, READING, AND LISTENING: A PSYCHOLINGUIST'S JOURNEY FROM THE LAB TO THE FIELD

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As you are reading this sentence, your mind is applying the rules of English grammar, effortlessly and with no conscious awareness. This process enables you to understand what the sentence means, and in particular who is doing what to whom. This is an essential part of successful communication and it crucially depends on our ability to learn and use grammar. In this talk I will present research that examines the cognitive mechanisms that underpin this ability. I will show what role sleep-related memory consolidation plays in grammar learning, how the language we hear and we read shapes our language use, and how what we know about the mechanisms of grammar learning can be used to improve children's language skills in low-resource multilingual settings.

*NENAD HAVELKA LECTURE OF HONOR:*

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*AWARD FOR OUTSTANDING ACHIEVEMENT IN THE EARLY STAGE OF SCIENTIFIC CAREER*



ILLUMINATING DARK PERSONALITY TRAITS

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The Dark Triad/Tetrad is a construct that has rapidly become popular in the last 20 years and is increasingly attracting the attention of researchers and the general public. This constellation of socially aversive traits (Machiavellianism, narcissism, psychopathy, and sadism) has found application in explaining a wide range of antisocial behaviors in different contexts. Yet, there are still conceptual dilemmas regarding the dark traits which represent the backbone of my research. Among them, the key dilemmas are what constitutes the core of dark personality traits (the so-called Dark Core) and whether dark traits can be reduced to a single, central characteristic or to a basic personality trait such as agreeableness or honesty-humility. These dilemmas are followed by the question of the shared genetic factors of dark and basic traits, and I will present the results of the first twin study in Serbia related to this issue. In support of the discussion on the similarities and differences of dark traits, I will present a series of studies by my research team in which we examined specific relationships between dark traits and socially aversive outcomes, such as aggression in offline and online environment, then antisocial punishment and non-compliance with protective measures during the COVID-19 pandemic. At the end, I will consider the second generation of dark traits research and possible directions for the development of this research field.

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BEHAVIORAL ECOLOGY OF PERSONALITY: BRIDGING PERSONALITY  
EVOLUTION BETWEEN HUMANS AND OTHER ANIMALS

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Behavioral ecology of personality is a field within evolutionary behavioral ecology that tries to provide answers on three evolutionary puzzles of animal personality: the existence of inter-individual variation in behavior, diminished intra-individual variation, and associations between functionally different personality traits. Human personality ecology applies the same conceptual framework in explaining these phenomena in humans. The main goal of the present talk is to present the models from animal personality ecology that we can use in human research with emphasize on natural selection, state-dependent models, and evolutionary tradeoffs. We will show empirical examples, including our own data, to illustrate evolutionary mechanisms that can help in answering on three puzzles of personality (highlighting the first one, due to a highest amount of empirical data) in the context of Big Five and HEXACO personality traits, and psychopathic personality traits. Namely, the existing findings show that disruptive selection may maintain genetic variation in Conscientiousness trait because both extremes on the trait can have elevated fitness, while intermediate scorers have the lowest fitness: this

finding is explained by a variation in family planning. Variation in environmental harshness moderates the links between Honesty-Humility trait and fitness, where low levels of the trait are adaptive in harsh environmental conditions but high levels of the trait enable increased fitness in beneficial environments. Quite similarly, environmental harshness (dysfunctions in primary family) may maintain the variation in affective psychopathy characteristics. Quantity-quality tradeoff (the tradeoff between number of offspring and parental investment) is a potential candidate for explaining the variation in trait Neuroticism and affective facet of psychopathy. The tradeoff between mating and parenting has been linked to psychopathy as well, but surprisingly, not the tradeoff between fertility and longevity. At the end, we provide the overview of field's conceptual significance and outstanding questions for future research.

*SYMPOSIUM*

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THE EFFECTS OF COVID-19 PANDEMIC ON SCHOOL AND OUT OF SCHOOL  
EXPERIENCES OF PUPILS IN SERBIA, SLOVENIA AND CROATIA

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The COVID-19 pandemic represented the greatest global disruption of educational process in recent history impacting generations of pupils at various educational levels. In order to respond to this situation, almost all educational systems introduced various forms of emergency remote teaching and learning with the goal of ensuring continuation of the educational process for the children and youth. These sudden changes represented a unique historical situation in which primary and secondary education cohorts experienced non-classroom teaching and learning for an extended period of time. The negative effects of the pandemic on educational processes were demonstrated in the amplification of already present inequalities between and within education systems and in the significant learning losses and disruptions in students' educational journeys. These negative effects extended to other important spheres of lives of young people as various forms of their relationships also faced challenges. This was evident in opportunities of meeting new persons, acquisition of friends and preservation of established friendships. For many of them times of the COVID-19 pandemic and changes in education may have resulted in increased feelings of loneliness. Furthermore in all educational systems, opportunities for pupils at risk were either significantly altered or disappeared completely in terms of both quantity and quality of learning and other life experiences. This symposium presents a series of papers from large-scale research projects in Serbia, Slovenia and Croatia examining the perceived impact of pandemic and changes in the organisation of educational processes induced by it on various aspects of pupils' lives. Symposium offers methodological and thematic diversity research teams employed in examining this extremely important topic. Thematically symposium includes qualitative exploration of the protective and risk factors for learning of Slovenian pupils from vulnerable groups – namely pupils with disabilities and learning difficulties, those from disadvantaged socioeconomic contexts and gifted pupils. Two papers from Serbia focus on the qualitative exploration of knowledge acquisition and achievement and peer relations during COVID-19 pandemic offering both pupils' and teachers' perspectives. Papers from Croatia offer quantitative perspective based on very large nationally representative samples on changes over time in the perceived impact of pandemic on school and out of school experiences as well as feeling of loneliness of Croatian pupils during pandemic. Comparative context of these countries is particularly interesting and important as their educational systems share origins and main features but have also diverged in the past three decades regarding the implementation of policy options during and after the pandemic. Research findings aim to inform system-level policy measures aimed at empowering pupils, educational workers and parents to successfully master crisis situations in the future.

**Keywords:** COVID-19 pandemic, school experiences, out-of-school experiences, Western Balkans

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PROTECTIVE AND RISK FACTORS FOR LEARNING DURING THE COVID-19  
PANDEMIC: A COMPARISON BETWEEN VULNERABLE GROUPS OF SLOVENIAN  
PRIMARY AND SECONDARY SCHOOL PUPILS

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Apart from the growing empirical evidence of the impact of the COVID-19 pandemic on the academic and psychosocial development of the reference population, there's still little evidence on how the most vulnerable primary and upper secondary school pupils experienced this period. Therefore, the main aim of the present study was to investigate the self-perception of changes because of the COVID-19 pandemic during emergency remote education comparatively among four groups of pupils: pupils with special needs, gifted pupils, pupils from migrant backgrounds and pupils from families with low social status. Namely, we hypothesised that if their vulnerability was not supported, this could cause a possible dysfunctional adaptation to school life and academic performance during the pandemic. For the study, we interviewed 92 pupils aged 8 to 17 following the semi-structured protocol. The data were analysed qualitatively using MAXQDA software. The results showed that the experience of emergency remote learning (ERL) was different for different students, which isn't necessarily a characteristic of the target group, but primarily a consequence of the broader social context of the individual pupil interviewed. The pandemic seems to have made the challenges that pupils from vulnerable groups face in their daily school life even more apparent: Gifted pupils with few educational opportunities, foreigners without knowledge of the Slovenian language and socially not included, pupils from families with low social status in the middle of family conflict situations. On the other hand, from the interviews conducted, it could be concluded that educational authorities have addressed the needs of pupils with learning disabilities and other special needs well; they have also provided digital devices for ERL to some pupils, presumably from poorer families. The problems of social loneliness of foreign pupils and concern for the academic development of gifted pupils, as well as psychosocial support for all the students interviewed, regardless of their vulnerability, remained mostly unaddressed. In summary, lack of social contact with peers emerged as the most important risk factor in all groups of students, while the most important protective factor was a healthy lifestyle, resilience, and self-regulation, with which pupils entered the pandemic.

**Keywords:** emergency remote education, gifted students, special needs students, students from migrant backgrounds, students from families with low social status

Acknowledgment: This research was funded by the Ministry of Education, Science, and Sport of the Republic of Slovenia in the framework of the evaluation study entitled »Evalvacija poteka in učinkov izobraževanja na daljavo v času epidemije COVID-19 na ravneh osnovnošolskega in srednješolskega izobraževanja z vidika doseganja učnih ciljev in standardov znanja ter z vidika socialno-čustvenega odzivanja« 2021/22 [Evaluation of the implementation and impact of distance education during the COVID -19 epidemic in primary and secondary schools in terms of achievement of learning objectives and knowledge standards, and in terms of socio-emotional response 2021/22].

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## STUDENTS' KNOWLEDGE AND SCHOOL ACHIEVEMENT IN TIMES OF COVID-19 PANDEMIC - THE CASE OF SERBIA

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While many papers worldwide point to learning loss and knowledge deficit as significant effects of COVID 19 pandemic, there were no extensive studies that explored this topic in the Serbian context. Therefore, this paper investigated the effects of education organized during the pandemic in Serbia on students' knowledge and school achievement from the perspective of students and teachers. Research conducted within a broader cross-cultural project in Spring 2022 involved, among others, 84 interviews with teachers and 55 focus group discussions (FGDs) with typical students from the representative sample of primary and secondary schools in Serbia; however, for this paper we analysed teachers' accounts from 31 interviews and students' accounts from 13 FGDs ( $N = 99$ ). Inductive qualitative thematic analysis was applied and only teachers' perceptions of typical students' knowledge and school grades, as well as students' accounts of their knowledge and school grades were further analysed. It was determined that 77 coded segments addressed the students' knowledge, with eight having a positive valence, two – neutral, and 67 – negative valence. Those who noticed improvements in their knowledge reported gaining knowledge and skills unrelated to school curriculum due to more free time in the period of remote education. Perceived knowledge loss was associated with decrease in academic achievement. Similar pattern was identified in teachers' accounts. This calls for further analysis of factors that predominantly contributed to perceived decrease in school knowledge and achievements and reflection on potential solutions for preventing such outcomes in case of new waves of pandemic.

**Keywords:** knowledge, achievement, student, pandemic, effects

Acknowledgment: This work was supported by UNICEF Serbia in the framework of the project "Effects of the COVID-19 Pandemic on Educational Processes and Practices in the Republic of Serbia: Qualitative Research" (No. REF: BG/PGM/DK/TR/2022-592) and the Ministry of Education, Science and Technological Development of the Republic of Serbia (No. 451-03-68/2022-14/200163).

CHANGES OVER TIME IN THE PERCEIVED IMPACT OF COVID-19 PANDEMIC ON  
CROATIAN UPPER SECONDARY PUPILS' SCHOOL AND OUT-OF-SCHOOL  
EXPERIENCES

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Various studies point out that youth's school and out-of-school lives have been significantly changed during the COVID-19 pandemic and that the pandemic negatively affected pupils' well-being and educational outcomes. While most studies have been focused on concurrent or retrospective accounts of the COVID-19 impact, longitudinal research on the pandemic effects is generally lacking, particularly in southeast Europe. The aim of this study was to assess the changes over time in the perceived impact of COVID-19 pandemic on school and out-of-school experiences of pupils in upper secondary schools in Croatia. The in-person questionnaire was administered in 79 upper secondary schools in Croatia at two time points: at the end of the 2020/21 and 2021/22 school year (9008 2<sup>nd</sup> and 8598 3<sup>rd</sup> grade pupils participated at each time-point). The questionnaire included a single-item measure concerning the perception of impact of COVID-19 on pupils' lives in general and on various aspects of school (acquisition of knowledge and skills, learning motivation, attention in learning, learning habits, understanding of subject contents, digital skills, school grades, relationship with classmates, relationship with teachers) and out-of-school life (relationship with family members, relationship with close friends, involvement in out-of-school activities, involvement in physical activities and sports, physical and mental health). All items were measured on a five-point Likert-type scale (very negative to very positive). Aggregated school-level data analysis has shown that pupils perceive that their lives were generally less negatively affected by the COVID-19 pandemic at the second time point. Furthermore, pupils' self-assessment at the second time point were more positive on the majority of school and some of the out-of-school items (relationship with family members, physical and mental health). Interaction effects of gender and school type (gymnasium/vocational school) on most school and out-of-school items were observed at the second time point, suggesting that girls in gymnasium schools perceived they were more negatively impacted by the pandemic than other groups of pupils. The observed effects were small to moderate in size. The results are discussed in terms of the variability of perceived COVID-19 impact across time and in different segments of the pupil body.

**Keywords:** pandemic, upper secondary education, school experiences, out-of-school experiences

Acknowledgment: This work was supported by the Croatian Science Foundation IP-CORONA-2020-12 project "Changes in the Organization of the Educational Process caused by the COVID-19 Pandemic: Effects on Educational Experiences, Well-being and Aspirations of Pupils in Croatia"

QUALITATIVE STUDY OF PEER RELATIONSHIPS DURING COVID-19 PANDEMIC  
IN SERBIA: STUDENTS' PERSPECTIVE

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Although many studies addressed pandemic's influence on youth wellbeing related to the restricted contacts with peers, there is lack of data about students' perception of diverse pandemic impacts on their social life. This research is aimed to identify various types of students' experiences related to their relationship with peers in school and out of school context during COVID-19 pandemic. It is a part of broader qualitative study about schooling in Serbia in the time of pandemic including students of primary and secondary schools, their parents and teachers. Inductive thematic analysis was applied on students' sample i.e., on the discussions of 27 focus groups from primary and secondary schools. Results show that negative experiences about social life during the pandemic prevail since 70% of coded segments ( $N = 260$ ) belong to this broad category, while 21% represent positive and 9% neutral experiences. Social life was more affected in school context than in out of school, because students relate negative experiences more often to that context (153 coded segments) than to out of school (107 coded segments), while positive experiences are more often associated to out of school (59 coded segments) than to school context (20 coded segments). Negative experiences in school context are mostly described as longing for school mates due to lack of contacts during lockdown or measures in school (physical distance and division of a class into separate groups), and absence of school social events (excursions, school festivities, etc.). In an out of school context students missed going out with peers and complained about losing touch with them. Positive experiences in that context are dominantly related to socializing with peers despite measures against pandemic and to a lesser extent to online contacts via social networks. Positive experiences in school context students illustrate as a great joy being with school mates again when lockdown was over and insight about their importance. Neutral experiences are almost completely associated with out of school context, particularly with playing online games. Aforementioned major findings witness the large negative impact of pandemic on peer relations. Impressions of students from focus groups representing typical students' population will be further related to the experiences of students from vulnerable groups having learning difficulties or coming from families with low income.

**Keywords:** pandemic COVID-19, peer relationships, students, qualitative study

Acknowledgment: This research was funded by the UNICEF Serbia in the framework of the project "Effects of the COVID-19 Pandemic on Educational Processes and Practices in the Republic of Serbia: Qualitative Research" (No. REF: BG/PGM/DK/TR/2022-592) and the Ministry of Education, Science and Technological Support of the Republic of Serbia (No. 451-03-68/2022-14/200163).



FEELING OF LONELINESS OF CROATIAN PUPILS IN THE CONTEXT OF COVID-19  
PANDEMIC

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During the COVID-19 outbreak, the changes in the organisation of schooling process and social distancing measures have led to the changes in frequency and forms of social contacts, and might also result in the increase of loneliness among children and youth. However, recent studies have found that increased levels of loneliness might be short-term, and that social isolation does not always lead to loneliness. In the present study, we investigated the prevalence of loneliness among Croatian pupils at the end of school year 2021/22, when most measures intended for mitigating the effects of coronavirus disease were withdrawn and the schooling process was normalised. The aim of the paper was to explore the effects of perceived relationships with friends on the feeling of loneliness. The survey was conducted on a nationally representative sample of 165 Croatian elementary and upper-secondary schools. The survey was conducted in-person in cooperation with school coordinators. The total of 16.385 pupils participated: 3706 in 5<sup>th</sup> grade, 3866 in 7<sup>th</sup> grade and 8815 in 11<sup>th</sup> grade. 51.6% of participants were females and 48.4% were males. Single item measure of loneliness was applied using participants' self-reports about how often they feel lonely in the last two weeks. Measures of perceived relationships with friends included: single item measure of satisfaction with relationship with friends, factor score of the Friendship scale measuring social support from friends (Houghton et al., 2013), estimates of time with friends in a typical day in-person and online, and rating of the impact of pandemic on relationship with close friends. The results indicated that 12.8% of pupils in 5<sup>th</sup> grade, 17.5% in 7<sup>th</sup> grade and 18.1% in 11<sup>th</sup> grade felt lonely often or almost always in the last two-week period. GLM was applied to analyse the effects of gender, grade and measures of perceived relationships with friends on loneliness. Only 17% of loneliness was explained by this set of predictors. Gender, grade, social support from friends, satisfaction with relationship and time spent with friends in-person had small effects on loneliness, while the effects of time with friends spent online and rating of the impact of pandemic on relationship with close friends were negligent. The results were discussed in light of the recognition that understanding factors related with loneliness is crucial for developing school and public policies for reducing loneliness among pupils in post-pandemic times.

**Keywords:** loneliness, relationship with friends, social support from friends, COVID-19 pandemic

Acknowledgment: This research was supported by the Croatian Science Foundation IP-CORONA-2020-12 project "Changes in the Organization of the Educational Process caused by the COVID-19 Pandemic: Effects on Educational Experiences, Well-being and Aspirations of Pupils in Croatia"

*ROUND TABLES*

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ROUND TABLE I  
DEJAN TODOROVIĆ *BETWEEN REALITY AND ILLUSIONS*

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**Oliver Tošković**

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This symposium is dedicated to topics in the area of perception which were related to the research interests of recently retired professor Dejan Todorović, whose fruitful scientific career marked the work of Laboratory for Experimental Psychology, Faculty of Philosophy, University of Belgrade. Professor Todorović graduated in mathematics in 1975 at the University of Belgrade and received his MA in 1983 and Ph.D. in experimental psychology in 1985 from the University of Connecticut, USA. His postdoctoral positions were in Boston University, USA (1986-1987), Zentrum für interdisziplinäre Forschung, Germany (1994-1995), and Rutgers University, USA (1999). He taught courses on perception, research methods, statistics, and scientific communication, with research interests in experimental studies, mathematical analyses, and computational models of the perception of lightness, space, shape, pictures, and faces. Professor Todorović received third prize for the illusion of the year in La Coruna, Spain (2005), wrote three books, and 95 scientific publications which were cited 2310 times, giving him an H-index of 23 and an i10-index of 34. His creative and inspirational scientific ideas, dedicated teaching and mentoring continues to have a strong influence on perception and experimental research in psychology in Serbia, former Yugoslavia, and beyond.

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HIGH AND LOW – EGOCENTRIC DISTANCE AND VANTAGE POINT HEIGHT

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**Dejan Todorović**

Laboratory of Experimental Psychology, Faculty of Philosophy, University of Belgrade

The distance from an observer to an object on the ground plane (egocentric distance) can be recovered from information about the height of the observer's vantage point and information about the angular declination of the object (angle subtended by the direction to the horizon and the direction to the object location on the ground plane). Egocentric distances are generally underestimated. It has been suggested that this is due to overestimation of angular declination by a constant factor. With distance held constant, this hypothesis predicts that underestimation will be more pronounced for greater heights of the vantage point. We tested this prediction in two experiments. In Experiment 1 observers judged distances in three conditions: lying on the ground, standing, and standing on a 80 cm high platform. The object whose distance was judged was an experimenter (E1), standing on the ground at 5, 10 and 15 meters from the observer. Observers judged E1's distance by instructing a second experimenter (E2) to move away from or towards E1 in order to make the E1-E2 distance the same as the E1-observer distance. The E1-E2 direction was perpendicular to the E1-observer direction. We replicated

the general underestimation of egocentric distances. However, we found no effect of vantage point height ( $F = 3.1$ ;  $df = 2, 32$ ,  $p > .05$ ). In Experiment 2, observers were either standing on the ground or on a platform. Their task was to match the distance of a small object at their eye height to the distance of another small object lying on the ground, and vice versa. The positions of the objects were manipulated through a system of cords and pulleys, and their to-be-matched distances were 1, 3 and 5 meters. According to the angular declination hypothesis, distances of objects at eye level should be perceived more accurately, or at least as larger than distances of objects on the ground. A three-way ANOVA revealed all main effect as significant, participant position ( $F = 6.61$ ;  $df = 1, 16$ ,  $p < .05$ ,  $\eta^2 = .29$ ), object position ( $F = 5.22$ ;  $df = 1, 16$ ,  $p < .05$ ,  $\eta^2 = .25$ ) and object distance ( $F = 1831.52$ ;  $df = 2, 32$ ,  $p < .01$ ,  $\eta^2 = .99$ ), but none of the interactions reached significance. Sidak post-hoc tests found no effects of height of vantage point or even an effect contradictory to the angular declination hypothesis. Since, in both of our experiments, we did not find the effect of vantage point height on perceived distance, we were not able to confirm the angular declination hypothesis.

**Keywords:** observer's height, egocentric distance, vantage point, angular declination

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## CAN ACTION OVERCOME ILLUSORY POSITION SHIFTS IN DYNAMIC DISPLAYS?

**Ian M. Thornton**

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Dejan Todorović has contributed greatly to our understanding of visual illusions. His co-edited volume “The Oxford compendium of visual illusions” (Shapiro & Todorović, 2017) has quickly become a definitive resource in the field and his Perception Lecture article “What are visual illusions” (Todorović, 2020) is a true *tour de force*. It provides not only a wonderfully insightful review of a very broad range of phenomena, but also a novel and powerful framework for thinking about illusions and a very convincing defence of the position that visual illusions can teach us much about perception in general. In my own work, I have long been interested in various forms of localization errors, where the perceived position of a moving object is shifted in some way from its true position. One puzzle in this field is that laboratory studies of a variety of such phenomena predict much worse real-world performance than we actually see. That is, outside of the laboratory, we are usually able to navigate around the world quite successfully – often at high speed – without collision. Regardless of our own movement, we are also capable of interacting with moving objects, avoiding them or intercepting them, depending on the current task/sport. Could this discrepancy arise because laboratory participants are usually passive observers, but in the real world we are active agents? In this talk, I will focus on one compelling class of illusions known as “motion induced position shifts” (MIPS) and will ask the question of whether introducing *action* can help attenuate or even overcome this form of illusion. MIPS generally relate to situations in which the global, physical position of a target object is misperceived due to its own local motion. I will present work from a series of studies where participants were given active control over the global position of a target object – steering the object via a joystick or tilt-control – to attempt to accurately position it within a given context. In the crucial comparison, the same observers also made passive judgements, so

we were able to directly compare illusion magnitude with and without action. To our surprise, action actually amplified this form of illusion, rather than overcoming it, a finding that has implications for our understanding of vision for perception versus vision for action in the context of illusions.

**Keywords:** illusions, localization errors, motion induced position shifts, action, perception

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## ILLUSIONS IN PERCEPTION OF MOTION AND COLOUR

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Visual illusions (Todorović, 2020) are charming perceptual phenomena capturing equally strongly the imagination of laymen and the interest of scientists. A number of compelling illusions can be found in every domain of vision (Shapiro & Todorović, 2016). The kinetic depth effect is an illusory motion effect in which a two-dimensional field of dots appears three-dimensional as soon as it is set into motion. A series of experiments was conducted to define this emerging illusory 3D space. Stimuli were simplified to only 2 dots, which proved sufficient to create the appearance of 3D. The results were compared with predictions from Johansson's frontal-parallel principle. The principle was confirmed for dots moving on convergent paths, the results were inconclusive for straight paths, and the principle was disconfirmed for divergent paths. Based on the obtained data, we offered an alternative model of illusory space (Zdravković, 2002, 2003). Illusory motion can also appear on completely stationary images. Research will be presented where such images were optimised and used in visual search and cueing paradigms. A “pop-out” effect was found for an illusory motion target placed amongst a variable set size of distractors displayed in a circular array. Control conditions determined that the illusion, rather than structural differences between target and distractors, attracted attention (Thornton & Zdravković, 2020). Similarly, in a modified Posner cueing task paradigm, responses were reliably faster following a valid illusion cue (Zdravković & Thornton, 2017). Both experiments suggest that illusory motion can automatically attract attention. In the above experiments, hue and contrast were essential for creating illusory motion. Hue and contrast themselves can be susceptible to illusory phenomena. In fact, colour and lightness illusions further demonstrate the context effects that lead to illusory percepts (Todorović, 2006), even in the simplest displays (Economou, Zdravković, Gilchrist, 2015). In more complex scenes, the lightness of a target is affected not only by its immediate background but also by non-adjacent portions of the display. We included various grey targets, changed the structure and position of the elements, the curvature of the edges as well as the appearance of transparency. The findings challenged previous explanations based on edge classification and transparency/shadow perception so we offered an alternative model (Todorović, Zdravković, 2014) that will be discussed in the presentation.

**Keywords:** illusions, kinetic depth effect, illusory motion, lightness, colour

THEORETICAL WORK ON LIGHTNESS PERCEPTION

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Dejan Todorović started his theoretical work on lightness perception by studying the Craik-O'Brien-Cornsweet effect (COCE). He devised elegant new variants of COCE, which enabled him to refute many explanations including the non-isomorphic approach, differentiation-integration theory, and cognitive theory. Only the filling-in theory was able to account for Dejan's variations. These observations led him to develop, in collaboration with Stephen Grossberg, a neural network model of lightness perception. The model consists of two parallel processing systems: a Boundary Contour System (BCS) and a Feature Contour System (FCS). BCS simulates orientation tuning of simple and complex cells, creating a boundary representation of a stimulus. On the other hand, FCS computes luminance ratios by its on-centre off-surround receptive fields and discounts the effect of variable illumination. These systems converge to a common processing stage where diffusive filling-in enables FCS signals to flow across homogeneous surfaces until they are blocked by the output of BCS. The filling-in stage creates a surface representation that is hypothesised to be isomorphic to subjective perception. Grossberg and Todorović tested the proposed model through a comprehensive set of computer simulations on 1-D and 2-D input images. They showed that the model is capable of explaining many important phenomena including lightness constancy, lightness contrast and assimilation, the Hermann grid, COCE, and many others. Their neural network is a cornerstone in modelling lightness perception, which inspired many later theoretical developments including my own modelling attempts. In subsequent work, Dejan focused his attention on the role of junctions in modulating lightness perception. He designed a new illusion, which now bears his name, to show that perceived lightness departs in an opposite direction from what would be predicted by simple low-level mechanisms such as lateral inhibition. He suggested that the illusion arises from depth segregation of white and black surfaces induced by T-junctions. Todorović's illusion now serves as a critical test for any serious computational model of lightness perception. To conclude, I reviewed just a small part of Dejan's diverse work, but I hope to illustrate how profound and creative his contributions to the study of visual perception and visual illusions have been.

**Keywords:** lightness perception, lightness illusions, neural network model, computer simulations

EFFECTS OF FIGURE-GROUND SEGREGATION ON PERCEIVED  
TRANSPARENCY

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The classical Metelli's patterns can be classified in the three categories. The first category encompasses phenomenally transparent patterns: observer sees the transparent figure (e.g., rectangle) centered in front of opaque bicolor ground. The second category includes phenomenally shadowed patterns: observer sees bicolor surface with rectangular shadow on the center. The third category includes mosaic patterns: observer sees mosaic composed of adjacent surfaces with different gray-levels. Our demonstrations show that the similar configurations of surfaces don't produce an equally clear transparency effect. In the case when the central rectangular area of pattern satisfies the "transparent conditions", it will be clearly seen as a transparent frontal figure. However, when the same conditions are satisfied in the peripheral frame-like area, the transparency will not be seen so convincingly. Thus, the figural factors, i.e., the distributions of surfaces with different gray-levels, determine the strength of phenomenal transparency: the smaller central part of the visual field figure is more likely than the peripheral frame seen as the figure. In the present study the figural factors are controlled by introducing the model of two partially overlapping squares. According to this model both squares have equal probability to be seen as a figure. In our experiment, participants viewed two partially overlapping squares, one lighter and the other darker, with the luminance of the overlapping portion being varied so that it was more similar to the lighter or darker square, or had a luminance between the brightness of the two squares. Participants were asked to determine which of the two partially overlapping squares is transparent, i.e., which is perceived as closer to the observer, and which is opaque, i.e., located in the background. The results showed that, although in all three conditions the surface ratios satisfy Metelli's rules, the main factor that influenced the responses of the participants was the similarity of luminance: a square is perceived as transparent when the luminance of the overlapping part is more similar to its surface, while in the condition of intermediate luminance responses of the participants are bistable. These results do not contradict Metelli's rules that determine whether transparency will be seen or not, but they specify the conditions that determine what will be seen as transparent and what will be opaque.

**Keywords:** transparency, mosaic, figure, ground, gray, overlapping

ROUND TABLE II  
FIGHTING THE SYSTEM: CHALLENGES TO DIVERSITY AND EQUALITY IN  
SOCIAL (AND OTHER) PSYCHOLOGY

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**Marija Branković**

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We must face this fact: psychology is not sufficiently equal and diverse. Recent studies highlight inequalities within the discipline of social psychology and structural disadvantages faced by researchers from, among others, the region of South and Eastern Europe (Bou Zeineddine, Saab, Láštiová, Kende, & Ayanian, 2021; Nyúl, Lantos, Reicher, & Kende, 2021). Building on these insights, we proposed a project supported by the European Association of Social Psychology that aims to establish and empower a network of social psychologists from ten countries within the region of South and East Europe (Bosnia & Herzegovina, Croatia, Czech Republic, Hungary, Kosovo, Romania, Serbia, Slovakia, Ukraine, Latvia). This symposium is meant to be a local meeting of social psychologists to identify the challenges and possible solutions – practices and resources that can help. We want to present some insights and experiences to stimulate a discussion with our colleagues. In her talk, Bojana Bodroža will offer insights into the issue of how limited resources are a challenge to producing high-quality research and how these challenges can be overcome by relying on open-source practices and building international collaborations. Tijana Karić will discuss the challenges and opportunities for young researchers, as the early stage of their career is recognized as the turning point affecting the future international participation of researchers. Finally, Iris Žeželj will focus on examples of applicable practices aimed at increasing equality and diversity in the discipline that are overcoming the challenge of tokenism, such as inclusive editorial policies and fair crediting of co-authorship. The ambition of this symposium is thus to share experiences and empower researchers in future efforts at international participation, aware of challenges and biases but also more aware of their strengths and the opportunities for collaboration within the region.

**Keywords:** social psychology, diversity, equality, publishing, international collaboration

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(UN)AVAILABLE RESOURCES FOR SCIENTIFIC WORK AS THE MAIN OBSTACLE  
TO FOLLOWING CONTEMPORARY TRENDS IN (PSYCHOLOGICAL) SCIENCE

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In an effort to follow the contemporary scientific trend, researchers from Southeast Europe encounter numerous difficulties, of which the language barrier is only the first and most visible. Most of these difficulties in following the trends are related to and arise from the (un)availability of resources for scientific work. Unlike many other scientific disciplines, psychological science can produce certain research relying on minimal resources – in the first place, correlational research conducted online on convenient and readily available samples. However, relying predominantly on such research designs makes it more and more difficult to publish in the highest-ranked scientific journals. At the same time, inadequate financing of scientific and higher education institutions results in the difficult procurement of high technologies and software necessary for following contemporary scientific trends. A possible solution to this problem is open science practice, which is based on the idea of the democratization and availability of various research resources to everyone - from open data, research materials, analytical tools and codes, to publications. However, paying journal APCs hits researchers from poorer countries with limited resources for scientific work. These limitations result in reduced possibilities of publication in top journals and a lowered number of citations. However, it should be pointed out that widely available modern technologies and the internet have opened up numerous opportunities for international cooperation through which researchers can build their competencies and cooperation networks. Therefore, a significant part of the responsibility for following contemporary trends in science lies with the researchers themselves.

**Keywords:** research resources, open science, publication bias

Acknowledgment: This work is not funded. As usual.

„WHEN I WAS YOUNGER, SO MUCH YOUNGER THAN TODAY...“:  
OPPORTUNITIES FOR EARLY RESEARCH CAREER BUILDING

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On their path to integration into the wider research community, young researchers in the field of social psychology in Serbia face numerous obstacles from the very beginning of their careers. During the roundtable, I will present my experiences related to various aspects of my early career, which include research stays abroad, collaboration on international projects, engagement in professional organizations, receiving small grants, etc. I will also talk about all the obstacles I encountered and how I fought them - successfully or unsuccessfully. I would like to start a discussion about the opportunities available to young researchers, about ways to connect and improve careers in science, and about possible forms of support.

**Keywords:** social psychology, early career, international collaboration, research stays

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EXAMPLES OF GOOD PRACTICES AIMED AT INCREASING EQUALITY IN  
SCIENTIFIC RESEARCH AND ACADEMIC PUBLISHING: HOW TO AVOID  
DIVERSITY BECOMING TOKENISM

**Iris Žeželj**

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Many practices introduced to increase equality in the academic community seem to be only performative - introduced for image purposes and not genuinely motivated so that its users could feel less adequate or exploited. Although I have witnessed a number of such situations in previous international research collaborations, international professional associations and academic journals' editorial/review process, there were other positive examples. I will illustrate a number of positive practices such as fair crediting of co authorship in publications, testing inclusive organizational models for scientific conferences (diverse locations, more engagement of the local community, more linguistic diversity), editorial policies aimed at changing classical knowledge production patterns (from the composition of editorial boards to changing criteria of validating manuscripts), and attempts at decentralization of editorial role (by crowdsourcing topics, for example).

**Keywords:** social psychology, equality, diversity, practices

ROUND TABLE III  
THE PSYCHOLOGY OF CHATTING WITH CHATGPT

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In early 2023 humans around the globe became attracted to verbal interaction with a software application which was based on a large language model developed by the company OpenAI. Although it has reached popularity only recently, ChatGPT is a state-of-the-art descendant of the long line of research in natural language processing, psycholinguistics and machine learning. In our talks, we will first focus on the fundamental technical aspects of this model and then address two major issues pertaining to it. First, we will discuss ethical issues related to the application of chatbots, such as authorship attribution and plagiarism, but also the many useful applications in science, education, and clinical setting. Next, we will discuss the relationship of ChatGPT and artificial intelligence in general with human cognition, as captured in the title ChatGPT devised in response to the request to suggest a title for the panel discussion on ChatGPT.

**Keywords:** ChatGPT, natural language processing, psychology, ethics, cognition

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CHATGPT – TECHNOLOGICAL BACKGROUND AND APPLICATION POTENTIAL

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Large language models (LLMs) and tools, such as ChatGPT, have been demonstrated to be valuable in different fields. The models learn patterns as probabilities of occurrences of word sequences from massive amounts of natural language (NL) data (aka training data). A sequence is represented with numerical values describing the positions of words. Thus, the meaning of the word essentially depends on its position. Based on learned probabilities, the model analyzes new (unseen) input text to recognize the intent (matched pattern) and outputs the NL response. The input may be a question to answer or a sentence in the source language to translate into the destination language. As such, the models ultimately depend on the quality of the training data. While effectively answering a broad range of user inquiries, they expose limitations. Current limitations include reasoning issues, factual errors, and bias and fairness. These will be briefed and discussed.

**Keywords:** natural language processing, large language models, machine learning

ETHICAL QUESTIONS ARISING FROM THE USE OF AI-BASED CHATBOTS  
RELEVANT TO PSYCHOLOGY

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AI-based chatbots can be very helpful both for educational and scientific purposes. Among the most popular platforms based on GPT-3 are ChatGPT and Elicit. They can quickly answer complex questions, summarize material and even propose new research topics. Moreover, talking to chatbots can also be understood as a form of interactive learning. Still, their use raises ethical concerns. Scientific journals insist that AI cannot be listed as an author of a paper, since only humans can take the responsibility for the results presented in it. This is particularly important if there are flaws in the publication. Moreover, chatbots open space for a new type of plagiarism that, at least at the moment, passes automated plagiarism checkers, putting more responsibility on the editors and peer reviewers. From the educational perspective, learning how to successfully use AI-based chatbots can be a valuable skill, but it is equally important to teach students to critically assess the texts generated by AI, recognize potential biases that they might bring, and the importance of mastering a skill by oneself. Though we have calculators, we still learn how to multiply. Finally, there are great risks in using random AI-based chatbots for the purpose of psychotherapy. We have already witnessed that Bing's AI chat continuously insisted on answers that were troublesome for the human user. Thus, only chatbots developed for emotional support, tested and approved can be used when the human therapist is not available. The principles of having a responsible human in the loop and creating AI while having the user in mind are necessary from an ethical perspective. Moreover, careful monitoring, evaluating, and updating advanced digital solutions based on feedback is the only way to responsibly use them.

**Keywords:** authorship, education, learning, psychotherapy

THE RELATION OF AI AND COGNITION

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The addition of the label "artificial" before "intelligence" led to the stance that AI represents human-made human intelligence (HI), moreover human-like intelligence with superior features. While this is true for some aspects of AI, AI does not represent human intelligence as a whole. Human intelligence represents a quintessential human function and psychological construct, and as such is nested into a broader class of higher cognitive functions, like reasoning and problem-solving. Comparison of AI and HI maps limitations of AI, besides those stemming from the technology itself. One path for this is to analyze the rationality of AI, which is extensively covered in literature, especially through the approach of the rational agent within AI. We will discuss several paradoxes and limitations of the possibility of modeling unbounded rational AI agents. The computation power of AI is multiple times bigger than that of HI, it is not limitless. Furthermore, computation, as complex as it can be, is not the only nor enough feature for an agent to be dubbed as intelligent. For a machine to think intelligently about limitless information and degrees of freedom, the bounded rationality approach is needed, and several solutions have been proposed to limit the rationality of AI agents. Finally, modeling some, and not all features and their complex interplay of human intelligence, makes AI different in its nature, and, for time being, a weaker system than HI. We will also discuss which other psychological features of human (or other natural) cognitive systems should be embedded into developing AI which may successfully think, reason and solve problems, and some of those are far from being fully explained, not yet reaching implementation level in Marr's hierarchy. We conclude that AI serves as a proxy for some operations of human intelligence.

**Keywords:** reasoning, problem-solving, rationality

*PERCEPTION*

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ANISOTROPY OF PERCEIVED DISTANCE IN PERIPERSONAL SPACE

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The aim of the study was to examine the contribution of visual, proprioceptive and vestibular information to the phenomenon of the anisotropy of perceived distance-APD in the peripersonal space. Two experimental tasks were used. Guidance task in which the subject guides the experimenter to reproduce a perceived distance relying on the integration of visual, vestibular and proprioceptive information from the neck muscles. Motor reproduction task in which the subjects reproduce the distance themselves relying on previously mentioned information and additional information from the arm muscles. As a measure of APD we used two ratios of perceived distances, subjective horizontal to subjective vertical down, and subjective vertical up to subjective horizontal. Effects of proprioceptive information (task type), vestibular information (subject's body position - sitting, supine position or prone position), as well as the distance of the stimuli (20, 40 and 60 cm ) were analysed. 15 female students, 18-30 years old, participated in the guidance task, and 15 students, both gender (2 men), 18-22 years old, participated in the motor reproduction task. Two three-factorial repeated measures ANOVA were carried out. Comparing the APD ratio of sub. horizontal and sub. vertical down, the results show an interaction of the factors: body position and stimuli distance ( $F(4,112) = 8.819, p = .000, \eta^2 = .240$ ). Comparing the APD ratio of sub. vertical up and sub. horizontal, the results show interactions of the factors: body position and stimuli distance ( $F(4,112) = 5.451, p = .000, \eta^2 = .163$ ), body position and task type ( $F(2,56) = 6.010, p = .004, \eta^2 = .177$ ), stimuli distance and task type ( $F(2,56) = 13.156, p = .000, \eta^2 = .320$ ). Post-hoc Sidak tests indicate that, when the subject is in a sitting position and estimates distances of 20cm and 40cm, the APD effect is enhanced in the motor reproduction task. However, when the subject is in prone position and estimates a distance of 60cm, the APD effect is enhanced in the guidance task. We can conclude that in the sitting and supine position, subjects perceive distances on the sub. vertical up as longer, and on the sub. vertical down as shorter than the same on the sub. horizontal. Also, additional information from the arm muscles (motor reproduction task) enhances the APD effect because the subjects perceive movement above the head as more effortful activity than having the experimenter do it for them. Our findings are in line with *taking effort into account hypothesis* which explains APD as a perceived distance adjustment according to movement effort.

**Keywords:** anisotropy of perceived distance, visual, vestibular and proprioceptive information

## LIGHTNESS OF THE MULTI-LIT VIRTUAL OBJECTS

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Lightness (i.e., perceived reflectance) of an object remains roughly constant despite changes in illumination, effect known as lightness constancy. Most lightness models were designed for basic scenes containing simple two-dimensional (2D) objects and no illumination change. However, in everyday conditions, we are mostly exposed to complex scenes with three-dimensional (3D) objects and multiple illumination levels. When such conditions were replicated in the lab, lightness matches for a real 2D object were determined by the object's part covered by higher illumination, if the two illumination levels encompassed equal area (Zdravković et al., 2006). In the current study, we wanted to test whether the same principles apply to multi-lit virtual objects given that their lightness is also virtual (since objects presented on a computer screen have no reflectance). In addition to 2D objects, we also included 3D objects as stimuli. Forty naïve participants observed 18 stimuli presented one at the time on a CRT display situated in a dark chamber. Stimuli were rendered in BLENDER and “placed” in a virtual scene with shadow, that split each object into 2 differently illuminated parts. Stimuli were either 2D (triangle, rectangle, circle) or 3D (pyramid, cube, cylinder) objects, varied on 3 luminance levels (for the part in the shadow: 2.1, 11.2, 18.1 cd/m<sup>2</sup>; for the scene illumination: 12.3, 54.8, 94.0 cd/m<sup>2</sup>). Munsell scale, sited on the chamber floor, was used for collecting lightness matches. Half of the participants produced matches for the whole object and another half for differently illuminated parts. ANOVA showed that the matches for the parts in the scene illumination were significantly lighter than the matches for the parts in the shadow ( $Md = 2.491, p < .001$ ). Object matches were in a good agreement with those matches for higher illumination ( $Md = 0.067, p < .662$ ), and not with the matches for the part in the lower illumination ( $Md = 2.424, p < .001$ ). The main effect of object dimensionality was significant ( $F(1,58) = 20.496, p < .001$ ), with the 3D objects appearing darker than the 2D objects. As expected, for the two control factors we obtained the significant main effect of luminance level ( $F(2,116) = 943.739, p < .001$ ) and no effect for object's shape. Results demonstrated that the lightness of a virtual multi lit object is still determined by its part in a higher illumination. In addition, even virtual 3D objects displayed better lightness constancy than 2D objects.

**Keywords:** Lightness, Constancy, Virtual objects



DALTONIZATION ENHANCES WORKING MEMORY PERFORMANCE IN PEOPLE  
WITH THE COLOR VISION DEFICIENCY

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Color vision deficiency (CVD) refers to lost or reduced ability to discriminate certain hues. The most common CVD type is anomalous trichromacy in which the maximum sensitivity of one cone type has been shifted from its usual position – for L cones (protanomaly), for M cones (deuteranomaly), or S cones (tritanomaly). A variety of image processing techniques (daltonization methods) have been developed to adjust colors for people with CVD, helping them to better discriminate hues presented on screens. In this study, we aimed to investigate whether these methods can enhance visual working memory (VWM) performance in the same way they enhance perception. We recruited 23 (1 female,  $M_{age} = 37.4$ ) CVD participants (17 deuteranomalous; 6 protanomalous) and 23 age and gender-matched controls. Color pairs with constant lightness were chosen from three pseudo-isochromatic lines. They were daltonized in two ways – by enhancing the red-green or the blue-yellow contrast on two levels (0.2 or 0.6 of Euclidean distance in CIELab space). Participants had to match a single target color to either one of the simultaneously presented test colors (perceptual task) or colors presented one second after the target (memory task). CVDs were significantly slower (1510ms vs. 1240ms) and had a lower accuracy (91.7% vs, 97.1%) than controls. Daltonization methods brought CVDs performance to the level of controls, both measured by speed and accuracy. The daltonization also significantly interacted with the task both for speed ( $F(4,176) = 2.6$ ;  $p = .03$ ;  $\eta^2 = .05$ ) and accuracy ( $F(4,176) = 14.29$ ;  $p = .00$ ;  $\eta^2 = .45$ ) showing that color adjustment, and especially the blue-yellow daltonization had a greater impact on the memory task performance. Our results show that VWM performance in people with CVD is fully comparable with the controls if the colors are adjusted to their needs confirming the importance of visual input for memory processes. More importantly, our results show significant differences in the way daltonization types affect performance depending on the memory load of the task. This has a clear practical application when choosing the appropriate type of daltonization depending on whether colors need to be adjusted solely for the purposes of perceptual discrimination or for colors that need to be retained in memory.

**Keywords:** color vision deficiency, working memory, daltonization

CONTINGENT CAPTURE BY COLOUR IS SENSITIVE TO CATEGORICAL COLOUR PERCEPTION

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Contingent-capture theory (CCT) postulates that attention can only be captured by the top-down matching stimuli. In experiments within this search paradigm, participants are asked to memorize a predefined target and to find it among distractors. But there is also a location cue, shown shortly before the search set, mostly not coinciding with the location of the forthcoming target. According to CCT, the cue which shares relevant features with the target (i.e. matching cue) still captures attention, and only the cue that does not match the target could be successfully ignored. Statistically, the contingent capture effect is demonstrated by the significant interaction between cue type (matching/non-matching) and cue validity (valid – the same position as the target / invalid – different position from the target). Although the contingent capture of attention is a well-known and thoroughly studied phenomenon, there is still no consensus on the characteristics of the top-down template which guides the search for colours. We tried to replicate the classical contingent capture effect on colour (Experiment 1) and to examine the role of language in this perceptual effect (Experiment 2). The sample for both experiments were the same 20 participants aged from 19 to 27 ( $M = 21.26$ ,  $Sd = 2.32$ ; 3 male). Participants memorized the colour of the target ring and searched for it among the distractor rings of 4 different colours. In Experiment 1, the matching cue was the same colour as the target, while the non-matching cue was of a different colour. Repeated measures ANOVA showed that attention is captured by cues of the same colour as target, while cues of different colours were successfully ignored (interaction:  $F(1, 19) = 108.97$ ,  $p < .001$ ,  $\eta_p^2 = .85$ ). In Experiment 2, the cue colour was never identical to the target colour but either belonged to the same linguistic category (linguistic matching cue) or not (linguistic non-matching cue). Cues were in both cases equally perceptually distant from the target. In this task, attention is captured by both cue types, but the degree of capture was significantly higher for matching cues ( $F(1, 19) = 9.78$ ,  $p = .006$ ,  $\eta_p^2 = .34$ ). Our research replicated the classic contingent capture effect but on colour, and also demonstrated the categorical colour perception effect in search task. Results show that the template for colour search contains physical characteristics of colour, as well as the information about colour category names.

**Keywords:** top-down contingent capture, categorical color perception, visual search

TASK DEPENDENCY OF COLOR-SHAPE ASSOCIATIONS

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Kandinsky's Color Theory, which implies associations between certain colors and shapes, inspired numerous research with inconsistent findings explained by cultural factors. However, research focused on color and shape characteristics (e.g., hue; curvature) indicated certain associations such as the one between pointedness and redness, but they turned out to be stimulus-dependent and obtained only through a color-shape matching task. In this study, we aimed to further investigate color-shape associations through two additional tasks. Four pairs of angular and curved abstract shapes with different numbers of protrusions (7, 8, 9, 10) were used. Colors were selected from the Munsell color system: hues varied by temperature - two warm (R, Y) and two cool (G, B), presented in two levels of lightness and constant saturation ( $C = 14$ ). In E1, participants (68; 29m) performed a 2AFC task: they chose the preferred shape for a given color. In E2, participants (68; 24m) rated their preference for each color-shape combination on a 7-point rating scale. As expected, E1 showed that curved shapes were chosen in more than 55% of cases, however, male participants choose them significantly less often than females ( $F(1,66) = 4.46, p = .03; \eta^2 = .06$ ). Curved shapes also got higher ratings in E2 ( $F(1,66) = 31.2, p = .00; \eta^2 = .32$ ). The results regarding color-shape associations pointed to a task-dependent preference - forced to choose (E1), participants preferred angular shapes in darker shades ( $F(1,66) = 3.73, p = .05; \eta^2 = .07$ ), whereas the same shapes got higher ratings (E2) when presented in lighter shades ( $F(1,66) = 5.34, p = .02; \eta^2 = .07$ ). No significant effect of color temperature on shape preference was found, even though the previously suggested trend of choosing red for angular was visible in E1. An interesting gender effect was observed - male participants gave higher rates to darker colors, while in females the same preference was observed only for cool colors ( $F(1,66) = 4.55, p = .03; \eta^2 = .06$ ). Our results support previous findings regarding curvature preference and male preference toward angular stimuli which are discussed as associated with stereotypically masculine concepts. Most importantly, our results suggest that color-shape associations are not only stimuli-dependent but also task-dependent. Therefore, future findings regarding intramodal associations should be carefully considered bearing in mind the methodology with which they were obtained.

**Keywords:** color theory, intramodal associations, color-shape associations, task dependency

*COGNITIVE PSYCHOLOGY*

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SIMILARITY OF SENSORIMOTOR EXPERIENCE AS A MEASURE OF THE  
RELATEDNESS AMONG THE MEANINGS OF AMBIGUOUS WORDS

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According to parallel distributed processing models, the mental representation of a word is distributed in the pattern of activation of basic units that represent its different features. In the case of different but related senses of polysemous words (e.g., head as part of the body and head as chief), the hypothesized activation patterns are similar. However, in the case of unrelated meanings of ambiguous words (homonyms), the hypothesized patterns are completely different (e.g., bank as an institution and bank as a river bank). In parallel, embodied cognition models see prior sensorimotor experience with an object as what constitutes a representation of the concept denoting the object. The aim of this research was to consider whether these two groups of models could be connected by considering sensorimotor information as basic units whose activation patterns carry information about meaning. Participants estimated the possibility of sensorimotor experience for individual senses/meanings of ambiguous words (e.g., river bank;  $N = 282$ ). That way we collected sensorimotor norms on twelve sensorimotor scales (e.g., To what extent can \_\_\_ be (1)seen/(2)heard/(3)touched etc.). In order to address the research question, the norms were validated in the following two ways. First, we tested the difference in the mean similarity of sensorimotor experience between related (polysemic) senses and unrelated meanings (homonyms). The expected difference was observed: sensorimotor experiences were more similar for related senses ( $U = 1161.5, p < .001$ ). To validate the norms the second way, we collected participant ratings of the semantic similarity of sense/meaning pairs. This similarity measure was found to be positively related to sensorimotor meaning similarity ( $r = .495, p < .001$ ), supporting the hypotheses. Globally, these results suggest that there is a partial mapping of the semantic similarity continuum (the degree of separation of basic units) onto the sensorimotor similarity continuum and that it makes sense to consider sensorimotor information as a special type of basic unit that carries information about meaning. This research has produced useful resources for future research (sensorimotor norms, semantic similarity ratings) and pointed out the connection between two groups of models that, in a different but, as it turns out, compatible way, try to answer the same question: how the meaning of words is mentally represented.

**Keywords:** lexical ambiguity, PDP models, embodied cognition models, sensorimotor norms, semantic similarity

ESTIMATING THE NUMBER OF SENSES AND SENSE PROBABILITY  
DISTRIBUTION FOR SERBIAN POLYSEMOUS NOUNS, ADJECTIVES, AND VERBS

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Previous findings revealed that number of senses and sense probabilities expressed as entropy predicted processing of polysemous words (Filipović Đurđević & Kostić, 2021; Mišić & Filipović Đurđević, 2022). However, that had previously only been demonstrated for nouns. Part of speech was not commonly considered in the lexical ambiguity literature, neither as theoretical standpoint nor as methodological control (Eddington & Tokowicz, 2015). This study plans to expand the polysemy research to adjectives and verbs, and to compare the effects. We estimated the number of senses (NoS) and the distribution of sense probabilities for 308 Serbian nouns, adjectives, and verbs, and then tested the effects of NoS, entropy (H), and redundancy (T) on processing of polysemous words. Estimation of H and NoS was done through a sense production task, where participants listed all senses of a word that they could remember. Then, words were split across a group of coders who classified the listed senses in two ways. First, senses were classified into categories formed according to Matica Srpska's Dictionary of Serbian language (2011) word senses. Then coders went through the remaining uncategorised senses and added categories not present in the dictionary. Additional two coders classified senses on a subsample of words partially overlapping with words of each of the main coders to compare estimations. Correlations between main coders and control coders varied from .004 to .971 (mean  $r = .69$ ,  $SD = .23$ ; all  $ps < .05$ ). Using dictionary categories revealed to be a good strategy when senses are classified by multiple coders, since correlations between coder estimations were lower for measures calculated when additional categories were introduced (dictionary: mean  $r = .78$ ,  $SD = .24$ ; additional categories: mean  $r = .59$ ,  $SD = .17$ ). This suggests that large-scale categorisations should rely on predefined categories or at least be guided by them. Measures developed through this categorisation (NoS, H, T) were then used to predict RTs for three word classes. Our goal was to test whether these measures effects differ in verbs and adjectives, compared to nouns. Preliminary results of linear mixed-effects modelling revealed no interaction between NoS/H and word class, however, revealed NoS ( $b = -.012$ ,  $S.E. = .003$ ,  $df = 287.81$ ,  $t = -3.62$ ,  $p = .000$ ) effect across all classes and no H or T effects. We concluded that our NoS estimations did describe polysemous words representations, whereas sense probabilities were not adequately captured by our categorization.

**Keywords:** polysemy, entropy, word class, number of senses, sense probability

STILL UNDER STRESS? POST PANDEMIC CHANGE IN THE RELATIONSHIP OF  
AFFECTIVE DIMENSIONS OF WORDSMilica Popović Stijačić<sup>1</sup> | [milica.popovic.stijacic@fmk.edu.rs](mailto:milica.popovic.stijacic@fmk.edu.rs)Ksenija Mišić<sup>2</sup>Dušica Filipović Đurđević<sup>2,3</sup><sup>1</sup>Departman za psihologiju, Fakultet za medije i komunikacije, Univerzitet Singidunum<sup>2</sup>Laboratorija za eksperimentalnu psihologiju, Filozofski fakultet, Univerzitet u Beogradu;<sup>3</sup>Departman za psihologiju, Filozofski fakultet, Univerzitet u Beogradu

During the last two years, we witnessed the coronavirus pandemic and its impact over the mental health (e.g. Damnjanović et al., 2020; Rudroff et al., 2020). Previous research showed that emotional valence (EV) and arousal (A) ratings change under suspense (Delatorre et al., 2019), while Planchuelo et al. (2020) recorded lower A estimates during the COVID-19 lockdown. Having this in mind, we assumed that isolation due to quarantine would change how we emotionally experience words and that the EV and A estimates from post COVID-19 period should be similar to those collected in 2018. To answer this hypothesis, we compared the EV and A estimates collected during 2018 (the first wave), with the new ratings collected at the beginning of the pandemic in 2020 (the second wave) and in the summer of 2022 (the third wave). In the first and second wave, participants were psychology students ( $N_1 = 40$ ,  $N_2 = 42$ ;  $D_{age} = 19$ , ~90% women); in the third wave, participants were accessed via social networks ( $N_3 = 100$ ;  $M_{age} = 41.7 \pm 8$ , 86% women). The number of words presented to participants varied across three data collection waves ( $N_1 = 2100$ ,  $N_2 = 802$ ,  $N_3 = 882$ ). For EV, extremes of the bipolar scale represented negative (1) and positive (7) words. Arousal was rated on a unipolar scale, where low extreme represented words low in arousal and high extreme highly arousing words. The middle point (4) represented neutral words in both scales. The EV and A estimates from the second and third waves showed high correlations with those collected during 2018 (the first and second wave correlations:  $r_{EV(800)} = .93$ ;  $.90$ ,  $p < .001$ ;  $r_{A(800)} = .76$ ;  $.70$ ,  $p < .001$ ). The EV is a more stable indicator of the emotional experience of words, compared to the A, which was in accordance with previous normative studies. A new finding concerns a relationship between EV and A estimates usually described via a quadratic or U-function (Bradley & Lang, 1999), indicating that negative and positive words excite us more, while we are indifferent to neutral words. Such a relationship was recorded in the first wave ( $r(800) = -.29$ ,  $p < .001$ ) but not during the second and third waves. The relationship became nearly linear ( $r = -.55$ ,  $p < .001$ ) in the second wave and perfectly linear in the third ( $r = -.77$ ,  $p < .001$ ). Our results revealed that our participants became more sensitive to the negative content and less sensitive to the positive content. This pattern could be linked to reduced resilience and may represent a mental health risk.

**Keywords:** emotional valence, arousal, COVID-19, ratings, correlation

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DOES ONE SIZE FIT ALL? INDIVIDUAL PREDICTORS OF WORKING MEMORY  
TRAINING GAINS

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Studies showed great inconsistencies in working memory training effectiveness. Besides methodological reasons, a potential source of variation in reported effects may be individual differences among participants. While some individuals may show great gains, others may show little to no training improvement. Individual differences in cognitive training gains can indeed be predicted by a variety of factors, such as age, pre-intervention cognitive abilities or individual differences in personality. Therefore, this study aimed to evaluate individual predictors of working memory training gains. Forty-two healthy middle-aged adults (49-65 years old) were randomly assigned into two groups: working memory training (n-back training) and active control group (communication skills training). A pretest-posttest design included twenty 20-minute sessions distributed over ten weeks. The Training group showed a significant gain in the criterion n-back task ( $F(1,40) = 22.96; p < .001; \eta_p^2 = .365$ ). Mixed effects model analyses indicated that individual differences in age and fluid reasoning were significantly associated with training performance and gains. Participants with greater fluid reasoning showed better performance in the training ( $b = 0.25, SE = 0.099, p = .02$ ). Greater gains in training were observed for older participants ( $b = -0.11, SE = 0.044, p = .01$ ). Consciousness and neuroticism were not significant predictor of training gains. Our findings call for a personalized and tailored approach to designing and implementing cognitive training interventions, especially considering differences in age and fluid reasoning.

**Keywords:** working memory, individual differences, training gains

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AROUSAL, ABSTRACTNESS AND FAMILIARITY OF WORDS AND THEIR  
ASSOCIATIVE FIELDS IN DIFFERENT AGE GROUPS

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Previous studies suggested an early competence for the processing of basic dimensions of connotative meaning (e.g. affective valence) and its stability during language development (Mađarev, Štulić, Ilić & Janković, 2021). In the present study we examined relations between arousal, abstractness and familiarity of words and their associative fields in participants from four age groups (5-, 9-, 13- and 17-year-olds). Forty nouns and twenty the most frequent associations from their associative fields were selected from the Developmental Associative Dictionary of Serbian Language (DADSL) for the analysis. Ratings of arousal, abstractness and familiarity for forty stimuli-words and corresponding eight hundred associations were selected from the database Affective Norms for Serbian Words (ANSW). Results showed statistically significant positive correlations between arousal, abstractness and familiarity of stimuli-words and average arousal, abstractness and familiarity of their associative fields in all four age groups. Further analysis showed that a significant percentage of variance of connotative meaning of stimuli-words could be explained by the connotative meaning of their associative fields in all four age groups: *arousal (impressiveness)*: 53% ( $F(1, 38) = 42.8, p < .001$ ); 58% ( $F(1, 38) = 52.46, p < .001$ ); 60.4% ( $F(1, 38) = 58, p < .001$ ) and 60.8% ( $F(1, 38) = 58.96, p < .001$ ) for the 5-, 9-, 13- and 17-year olds, respectively. Similar findings were obtained for *concreteness*: 64.8% ( $F(1, 38) = 70.06, p < .001$ ); 54.8% ( $F(1, 38) = 46.11, p < .001$ ); 54.1% ( $F(1, 38) = 44.71, p < .001$ ); 51.3% ( $F(1, 38) = 39.99, p < .001$ ), and *familiarity* 38.6% ( $F(1, 38) = 23.92, p < .001$ ); 36.7% ( $F(1, 38) = 21.97, p < .001$ ); 41.1% ( $F(1, 38) = 26.48, p < .001$ ); 47% ( $F(1, 38) = 33.67, p < .001$ ) for the 5-, 9-, 13- and 17-year olds, respectively. Additional analysis showed no statistically significant differences in the strength of association of stimuli-words and their associative fields between different age groups. These results are in line with the Associative hypothesis of connotative meaning formation (Mađarev & Janković, 2021), which suggests that the connotative meaning of words depends on the connotation of the words that make up their associative fields.

**Keywords:** connotative meaning, arousal, abstractness, familiarity, associative fields

## ASSOCIATIONS OF BREASTFEEDING DURATION AND COGNITIVE DEVELOPMENT FROM CHILDHOOD TO MIDDLE ADOLESCENCE

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This study assessed a dose-response relation between the breastfeeding duration and cognitive skills in children from 5-15-years of age. The data from longitudinal cohort study Growing up in Australia: The Longitudinal Study of Australian Children were accessed. The main exposure was the duration of breastfeeding (in months). The main outcomes were language skills assessed via Peabody Picture Vocabulary Test, 3rd Edition (PPVT-3, Dunn & Dunn, 1997) at 5-, 7-, and 9 ( $N = 8670$ ), non-verbal intelligence assessed via Matrix Reasoning subtest from Wechsler Intelligence Scale for Children, 4th Edition (WISC-IV, Wechsler, 2003) at 7-, 9-, and 11-years ( $N = 8592$ ), and executive functions (EFs) examined via Cogstate Cognitive Testing battery at 15-years ( $N = 6227$ ). Covariates included: child's sex, gestational age, exact age at testing, number of older siblings, maternal alcohol consumption during pregnancy, cigarette smoking during pregnancy, maternal postnatal depression, maternal and paternal education, maternal and paternal age at delivery. To control the covariates, the adjustment models were fitted, one for each testing age with covariates as predictors and language skills, non-verbal intelligence, or EFs as main outcomes. Next, residuals from these models were extracted and used in main analyses. For main analyses, in case of language skills and non-verbal intelligence, linear-mixed effect regression models were fitted with adjusted language or non-verbal intelligence scores as outcome variables, age at testing and breastfeeding duration as predictors, an interaction between breastfeeding duration and age at testing with a random intercept for participants. To assess the effects of breastfeeding duration on EFs a linear model was fitted with the adjusted EFs as an outcome variable and breastfeeding duration as a predictor variable. The results demonstrated that a longer duration of breastfeeding was significantly associated with greater language skills from 5-9 ( $\beta = .05$ ,  $df = 8822$ ,  $t = 8.87$ , [95 % *CI*, .04 to .06],  $p < .001$ , *Cohen's d* = .19) and greater non-verbal intelligence from 7-11years ( $\beta = .02$ ,  $df = 8611$ ,  $t = 5.27$ , [95 % *CI*, .01 to .03],  $p < .001$ , *Cohen's d* = .11). There was no significant relation between breastfeeding duration and EFs at 15-years. These results support a dose-response relationship between breastfeeding duration and language skills and non-verbal intelligence in children from 5 to 11-years of age.

**Keywords:** breastfeeding, language development, non-verbal intelligence, executive functions.

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## THE EXPERIMENTAL ASSESSMENT OF PROSPECT THEORY'S EXPLANATORY CONCEPTS: THE LOSS AND GAIN ZONES IN RISKY CHOICE FRAMING

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According to prospect theory, the framing effect represents a change in the preference order in risky choice decision making based on whether outcomes are presented as gains or losses, because the reference point of the decision maker (DM) is moved to the so-called “gain and loss zones.” The DM changes their estimates of probability and value of potential outcomes differently based on whether they’re in the gain or loss zone, and makes different choices accordingly. However, prospect theory doesn’t clearly define these zones in a measurable manner, nor incorporate any mention of the contribution of emotional states to this deviation from normative rationality. In the model of risk as feelings, the crux of our decisions is the interplay between anticipatory and anticipative emotions – i.e., how the decision maker feels leading up to their choice, and how they expect to feel upon learning its outcome. This research’s goal was to formulate an operationalization of the loss and gain zones in risky choice framing by merging explanatory concepts from prospect theory and the model of risk as feelings. The zones represented different combinations of subjective value and probability of choice outcomes, choices between the risky and safe options (prospect theory), anticipatory, and anticipative emotions (risk as feelings). The zones were induced through 14 formally equivalent risky choice tasks: each participant completed 7 tasks presented as loss opportunities and 7 as gain opportunities (counterbalanced). The basic framing effect was confirmed ( $F(1, 93) = 26.5, p < .001, \eta_p^2 = .222$ ). There was no significant difference between subjective probability estimates for different risk outcomes ( $F_s(1, 93) = 1.17$  and  $2.26$ , all  $p_s > .05, \eta_p^2_s = .012$  and  $.024$ ), counter to expectations. The estimates of subjective value for different outcomes interacted with the frame ( $F(1.38, 128.41) = 18.94, p < .001, \eta_p^2 = .169$ ). All main effects for subjective value estimates between frames were significant ( $F_s(1, 93) = 7.71$ – $38.8$ , all  $p_s < .01, \eta_p^2_s = .076$ – $.294$ ), as expected. The self-report measures of emotional states (anticipatory vs. anticipative) interacted with the frame ( $F(1, 93) = 4.37, p = .039, \eta_p^2 = .045$ ). Main effects for both emotional states between frames were significant ( $F_s(1, 93) = 50.8$  and  $68.8$ , all  $p_s < .001, \eta_p^2_s = .353$  and  $.425$ ), as expected. The results support the validity of the novel operationalization of the gain and loss zones in risky choice framing.

**Keywords:** prospect theory, risky choice framing, gain and loss zones, risk as feelings, anticipative and anticipatory emotions

MINDFULNESS AS A METHOD FOR REDUCING THE SUNK COST EFFECT AND  
THE COMMITMENT BIAS: MODERATING EFFECTS OF PERSONALITY TRAITS  
AND THINKING STYLE

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Debiasing refers to a variety of methods for reducing cognitive biases. The aim of our study was to replicate the recent Hafenbrack et al.'s (2014) finding that one short mindfulness session can reduce sunk cost effect. Since it has previously been indicated that mindfulness meditation might enhance cognitive flexibility, we also included the commitment bias in the research. Additionally, we explored whether agreeableness (A), conscientiousness (C), and actively open-minded thinking (AOT) moderate the expected effects of mindfulness on cognitive biases. The experiment was conducted using the SoSci Survey platform at the Faculty of Philosophy, University of Belgrade. Participants ( $N = 108$ , 25.0% males,  $M_{\text{age}} = 23.55$  years,  $SD_{\text{age}} = 6.17$ ) were randomly assigned to either mindfulness (experimental) or mind-wandering (control) group. In the mindfulness condition, subjects listened to a 15-minute audio recording in which they were instructed to focus on their breath and the present moment. The control group listened to an audio recording of equal duration in which they were instructed to allow their thoughts to wander freely. Afterward, subjects completed decision-making tasks in medical and business domains, measuring susceptibility to sunk-cost effect and commitment bias, as well as a questionnaire measuring AOT, C, and A. Mindfulness meditation led to a significant reduction of commitment bias ( $\chi^2(1) = 5.20$ ,  $p = .023$ ,  $r_{\phi} = .22$ ), but it showed no effect on sunk cost bias in either of the domains ( $ps > .05$ ). Also, subjects scoring lower on AOT were more prone to commitment bias ( $r = -.19$ ,  $p = .045$ ), but they also benefited more from mindfulness meditation as indicated by a significant interaction between AOT and treatment condition in the binary logistic regression analysis ( $Wald \chi^2(1) = 5.27$ ,  $p = .022$ ) after controlling for the main effects. Conversely, C and A did not correlate significantly with the biases, nor did they moderate the effect of mindfulness ( $ps > .05$ ). In sum, the original findings were not replicated. However, analogous effects regarding commitment bias were detected, indicating the potential of mindfulness on reducing other biases. These effects might be explained by an increase in cognitive flexibility following mindfulness meditation, making a person more ready to consider new information and modify previous decisions. This is also congruent with the finding that mindfulness meditation had a greater impact on subjects who are generally not prone to actively engage in open-minded thinking.

**Keywords:** debiasing, mindfulness meditation, sunk-cost effect, commitment bias

FOREIGN LANGUAGE EFFECT IN IMAGEABILITY RATING OF THE BULLSHIT  
STATEMENTS OF DIFFERENT EMOTIONAL VALENCE

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The foreign language effect (FLE) refers to the observed difference in evaluations of the same material presented in the foreign language (FL) as opposed to the native language (NL). Previous research focused on the FLE in the context of meaningful material. The present study investigates the cognitive processing of nonsense, namely bullshit statements. We aimed to create bullshit and everyday statements in Serbian and English, which differ by emotional valence (EV) but are matched on various features, and to investigate whether it would be possible to match these statements for the imageability of their content. For that purpose, we conducted two studies on samples of Serbian native speakers ( $N_1 = 91$ ,  $N_2 = 93$ ). The first study aimed to select words for the final statements and collect lexical norms to control and manipulate the statement properties. We extracted a group of English words from the existing database, along with their familiarity, EV, and imageability ratings, and collected familiarity ratings from Serbian native speakers. The words were translated into Serbian and rated for EV and imageability. Based on these ratings, we created our database of the words and their translational equivalents familiar to Serbian speakers and matched them for EV. However, Serbian words were slightly more imaginable than their English equivalents ( $t(699) = 9.024$ ,  $p < .01$ ,  $d = .341$ ). The second study aimed to evaluate the statements as a whole. Using our database of translational equivalents and the custom-made software, we created 480 statements. Bullshit and everyday statements were based on the same randomly selected sample of either negative, neutral, or positive words matched for other relevant lexical-semantic features. Participants rated the statements for EV and imageability. As intended, the statements differed by EV ( $F(2, 71) = 1053.09$ ,  $p < .01$ ,  $\eta^2 = .904$ ). Nevertheless, the everyday statements were evaluated as more imaginable than the bullshit statements ( $F(1, 71) = 235.201$ ,  $p < .01$ ,  $\eta^2 = .385$ ), and the statements in English were more imaginable than their Serbian equivalents ( $F(1, 71) = 59.111$ ,  $p < .01$ ,  $\eta^2 = .055$ ). The results show that the statements in the FL are rated as more imaginable than their NL translations, even though the constituting words were rated as less imaginable when presented in FL. The observed difference could result from the weaker foreign language entrenchment in the semantic network.

**Keywords:** foreign language effect, imageability, emotional valence, bullshit statements, psycholinguistic norms

CUE THE METAREASONING: EFFECT OF SYLLOGISM VALIDITY,  
BELIEVABILITY AND AFFIRMATION ON METACOGNITIVE JUDGMENTS

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Metacognitive judgments underline metareasoning processes and occur as feelings of (un)certainly regarding how successfully reasoning and problem-solving activities are being unfolded. Recently proposed prospective judgment of performance is believed to be the first judgment that occurs during reasoning and is thought to rely on heuristic cues. The aim of this study was to further examine how this judgment is related to different heuristic cues in comparison to standard metacognitive judgments such as final judgment of confidence. Participants ( $N = 67$ ) completed 24 pairs of syllogistic reasoning tasks which were constructed by crossing dimensions of conclusion validity, believability and affirmation. They were instructed to determine whether the conclusion logically follows the presented premises. Firstly, they were presented with a syllogism for 4.5 seconds and instructed to read it as fast as they could, after which they assessed if they could solve it correctly. Participants were then presented with the same task while given unlimited time to solve it, after which they rated how confident they were in the provided answer. Three way ANOVA revealed significant effects of validity ( $F(1, 66) = 11.34, p < .01$ ), believability ( $F(1, 66) = 29.71, p = .000$ ) and affirmation ( $F(1, 66) = 30.32, p = .000$ ) on prospective judgment of performance, as well as their interaction ( $F(1, 66) = 13.65, p = .000$ ). Similar results were obtained regarding final judgment of confidence, revealing statistically significant effects of validity ( $F(1, 66) = 11.34, p < .01$ ), believability ( $F(1,66) = 29.71, p = .000$ ) and affirmation ( $F(1, 66) = 30.32, p = .001$ ), but no interactions. Final judgment of confidence ( $M = 90.42, SD = 7.37$ ) was somewhat higher than prospective judgment of performance ( $M = 87.77, SD = 8.14$ ) as indicated by a paired samples T-test ( $t(66) = -5.321, p = .000, d = .31$ ). Nonetheless, the two metacognitive judgments were highly correlated ( $r = .867, p = .000$ ). These results indicate that prospective judgment of confidence relies on heuristic cues, even after brief exposure to the problem, which is in line with previous research. Similar result patterns and a strong association between two metacognitive judgments once again point out that different metacognitive judgments probably share the same underlying cognitive mechanism.

**Keywords:** meta-reasoning, metacognitive judgments, prospective judgment of performance, final judgment of confidence, syllogistic reasoning

RELATIONS OF SIMPLICITY BIAS TO RATIONAL THINKING INDICATORS AND  
PROBABILITY BIASES

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Simplicity bias (SB) is the tendency to prefer simple over complex explanations when reasoning, ignoring the explanatory power of that explanation. One research line interprets simplicity as a cue for a higher probability of a model when the probability information is omitted. On the other hand, within the heuristics and biases approach to human cognition, it is well established empirical fact that reasoning about probabilities violates formal norms of rationality. Trying to explore if the SB meets the predictions of heuristics and biases approach, we proposed to set comprehensiveness of explanation as a norm and aimed to examine whether the relations of SB with similar cognitive biases and analytical thinking indicators are as expected by this approach. For that purpose, we constructed and tested a new individual measure of SB (SBM). Participants ( $N = 195$ ) were presented with 30 SB tasks that included relations between causes and consequences and then asked to choose between the offered simple or complex explanations. SB tasks were divided into two subsets that differed in comprehensiveness. In the standard situation (SS) subset, both simple and complex explanations were comprehensive, and in the conflict situation (CS) subset only complex explanations were comprehensive. SBM of each participant was computed as the difference between the proportion of simple explanations chosen in CS and SS. In addition, participants solved conjunction fallacy tasks (CF), base rate neglect tasks (BRN), cognitive reflection test (CRT) and numeracy scale (NS). The multiple linear regression analysis showed that 15.3% of SBM variance can be predicted by a linear combination of CF, BRN, CRT and NS. The negatively related significant predictors of SBM are NS ( $\beta = -.206, t = -2.863, p < .01$ ), and CRT ( $\beta = -.141, t = -2.037, p < .05$ ), whilst positive relationship is registered between SBM and BRN ( $\beta = .177, t = 2.499, p < .05$ ). CF was not significant predictor. The results indicate that the participants who score higher on the analytical thinking indicators tend to respond rationally more often to SB tasks too and that the participants who express more biased thinking do the same on the SB tasks. Despite the overall low presence of SB in participants, the results do not reject the possibility for SB to be seen as one of the cognitive biases.

**Keywords:** simplicity bias, rationality, probability biases

## USING ITALIC IN TWO SERBIAN ALPHABETS

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Every day, when reading texts, we encounter emphasizing their individual parts by using bold, italics or underlining. The goal is to attract the attention of the reader. Saliency of an object in visual perception is used as a term used to describe aspects of that object that distinguish it from neighbouring objects (Uddin, 2017). Visual saliency plays an important role in written text as the most valuable paralinguistic aspect because it completes statements and gives them an additional dimension (Lemarie et al., 2008). Visual saliency has been found to affect the recognition of isolated letters (Pelli et al., 2006) as well as the recognition of words (Macaya & Perea, 2014; Perea & Rosa, 2002). The main goal of this study was to examine the effect of visual saliency on the processing of Latin and Cyrillic words. Different typographies are used that can enhance visual saliency, but we focused on italic because some authors consider this typeface is an integral part of Latin-script typographic culture (Gaultney, 2021). The specificity of the Serbian language orthography is reflected in the phenomenon of synchronous digraphy, which represents the parallel use of two scripts - Latin and Cyrillic. Findings from previous studies showed differences in readability of these alphabets without varying the typeface (Ognjenović, Škorc, & Morača, 1995; Vejnović & Jovanović, 2012). This research can contribute to new knowledge about the phenomenon of digraphy. The sample consisted of 55 students from the University in Banja Luka. The lexical decision task was used in which stimuli were 6-characters long words and pseudowords (masculine nouns), written in lowercase in Arial font 48. Three factors were varied – lexicality (word and pseudoword), script (Latin and Cyrillic) and typeface (normal and italic). The obtained results show that there is a main effect of the lexicality ( $F(1,3296) = 660.341, p < .001, \eta^2 = .021$ ) and script on processing speed. Latin stimuli are processed faster than Cyrillic ( $F(1,3296) = 10.910, p < .01, \eta^2 = .003$ ). The typeface effect was also statistically significant ( $F(1,3296) = 57.160, p < .001, \eta^2 = .017$ ). A statistically significant interaction between the various factors was also obtained ( $F(1,3296) = 103.168, p < .001, \eta^2 = .030$ ) and it explains the largest percentage of variance. Italic stimuli in the Latin alphabet are processed faster than normal ones, while the opposite effect was obtained in the Cyrillic alphabet. It can be concluded that typographic features are important during visual word recognition and this effect is not the same in the two alphabets of the Serbian language.

**Keywords:** visual saliency, italic typeface, Serbian Cyrillic, Serbian Latin



EXPLORATION OF THE LATENT SPACE OF FIVE SCALES FOR TESTING THE  
VIVIDNESS OF MENTAL VISUALIZATION

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The mental visualisation (MV) process has recently become relevant in applied psychology (e.g. sports psychology). In this research, we wanted to explore the latent space of different questionnaires for examining the vividness of mental imagery (MI). We decided to use the most cited scales in the literature, which were validated multiple times, and can be applied in later research; for example, they can be used in sports and clinical psychology research. Those were the VVIQ (Marks, 1973) for examining the vividness of MV, the VMIQ (Isaak et al., 1986) for motor imagery, the PSIQ (Andrade et al., 2013) for the vividness of imagery in different sensory modalities, the SQ (Dean & Morris, 2003) for vividness, ease of eliciting and maintaining representations of a previously given shape and the SUIQ, for the use of MV in everyday life (Kosslyn, 1998). The average age of the respondents ( $N = 331$ , 78% women) was  $22 \pm 5.7$  years. All questionnaires had a Likert-type answering scale, where one indicated a higher and five lower levels of vividness. The VVIQ ( $\alpha = .92$ ), the VMIQ, and the SQ consisted of 16 items. The SQ has two identical scales for imagining two different shapes ( $\alpha_1 = .81$ ,  $\alpha_2 = .83$ ). The VMIQ has two scales: for imagining movements from the first person ( $\alpha = .95$ ) and for movements from the third person ( $\alpha = .95$ ). The SUIQ has 12 items ( $\alpha = .73$ ). The PSIQ has seven subscales for visual, auditory, tactile, gustatory, olfactory, interoceptive and affective imagery ( $\alpha = .91$ ). The ratings of each scale were summed according to the theoretical models. The principal component analysis (Varimax rotation) was applied. Three factors were extracted (62.5% of the variance). The first dimension consisted of six PSIQ subscales (24.8%), leaving out the visual imagery subscale. The second component (22.3%) was saturated by scores from scales that measure the vividness of visual and motor imagery. The third was saturated by two SQ scales (15.4%) that measure the MV of given shapes. Based on these results, three of the five examined questionnaires share a common latent space, which refers to the visual component of the MV vividness. The remaining dimensions refer to the vividness of the MI

from other modalities and the ability to manipulate specific visual representations of shapes measured by the SQ. Our results support that the MV questionnaires can capture modality-specific aspects of mental imagery. However, further research is necessary.

**Keywords:** mental visualisation, vividness of mental imagery, latent space, questionnaire.

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THE CORRELATION BETWEEN MENTAL ROTATION ABILITY AND VIVIDNESS  
OF MENTAL VISUALISATION IS STIMULI DEPENDENT?

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Over the last thirty years, researchers have tried to make an instrument for measuring mental visualisation ability (MV). Although it was hypothesised that the ability of MV is related to spatial abilities, previous research showed a low correlation between questionnaire measures and spatial abilities tests. Dean and Morris (2003) hypothesised that the cause of such a low correlation is the presence of different stimuli in tests of the vividness of MV and spatial ability. Questionnaires that assess the vividness of mental imagery rely on the individual's long-term memory, whereas in the spatial abilities tests, they are given specific visual stimuli. Our study aimed to explore the correlation between mental rotation ability (MR) and the ability to create mental images, measured by a questionnaire that requires imagining specific shapes. Participants completed two versions of the shapes questionnaire (SQ; Dean & Morris, 2003). In one version of the SQ, participants had to imagine a shape similar to the one from the MR test; in the other version, the shape was different. Additionally, the VVIQ (Marks, 1973) and the SUIS (Kosslyn, 1998), which estimate the vividness of mental imagery, were given to participants. Faculty of Media and Communications students participated in the study ( $N = 331$ ,  $Age = 22 \pm 5.7$ , 78% female). All the administered questionnaires involved a Likert scale: one indicated high, and five indicated low vividness. VVIQ questionnaire has 16 items ( $\alpha = .92$ ), SQL has two scales with 16 items for imagining two different shapes ( $\alpha_1 = 0.81$ ,  $\alpha_2 = .83$ ), and SUIS has 12 items ( $\alpha_2 = .73$ ). Summative scores were calculated for every scale. MR was examined using stimuli from the research of Ganis and Kievit (2015). The data were analysed with multiple regression analysis. The criterion variable was the per cent of accuracy in the MR test. Predictor variables were summative scores in VVIQ, SUIS and two SQ scales. The entire regression model was statistically significant:  $R^2 = .13$ ,  $F(4,326) = 12.2$ ,  $p < .001$ . The only significant predictor was a version of the SQ scale where the stimulus was similar to those from the MR test:  $\beta = -.386$ ,  $p < .001$ . The results support hypothesis that the correlation between questionnaire measures of the MV and spatial abilities measured by the MR test

depends on stimuli since the only predictor of MR accuracy was the SQ scale where the particular shape was imagined.

**Keywords:** mental visualisation ability, vividness of mental imagery, mental rotation ability, spacial ability.

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## DOES EYE-CLOSURE DURING TESTIMONY INCREASE ACCURACY OF RECALL?

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Eyewitness memory is not perfect. Its accuracy is subject to various personal and situational factors, such as absent-mindedness, blocking, bias, misattribution, persistence, suggestibility, and transience (Schacter, 1999). Some studies suggest that closing the eyes during testimony may prevent some of these errors and thus increase recall accuracy (see Vredeveldt, 2011). Given that information obtained from witnesses is often critical in police investigations, instruction that could improve eyewitnesses recall could contribute to a more credible reconstruction of the event. This study examined whether eye closure would increase the accuracy of eyewitness's testimony across the contexts (violent vs. nonviolent events, central vs. peripheral information). The study was conducted online. Two groups of participants (38 in each group, 20 to 29 years-of-age) were each individually shown a 6-minute video with violent or nonviolent content; the participants were collected in a snowball fashion and distributed randomly across the experimental groups. The video was previously unknown to all the participants. Recall followed immediately after the video presentation; the participants answered 24 questions that included both central and peripheral parts of the story (e.g., What was the colour of the tent in the back?). Centrality, as well as the content of the questions were determined in independent pilot study prior to the main experiment. During the recall, half of the participants had their eyes open, and the other half closed. A mixed three-way design ANOVA was used to test the effects of eye closure and violent/non-violent content on recall of events that were either central or peripheral to the story. Participants were more likely to recall central than peripheral events,  $F(1, 72) = 272.16, p < .001, \eta_p^2 = 0.79$ . The main effects or interactions of eye-closure and violent/non-violent content were not significant. The data suggest that events that were central to the story were remembered more accurately than events that were peripheral to the story. On the other hand, no evidence was found that closing the eyes influenced recall, either for violent or nonviolent videos; contrary to our prediction (see Vredeveldt, 2011), closing the eyes did not increase or decrease the accuracy of eyewitness recall. Further studies are needed to test the problem in more detail.

**Keywords:** memory, recall, testimony, eye-closure

*PERSONALITY PSYCHOLOGY*

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RELATIONS BETWEEN DARK TETRAD TRAITS AND BELIEFS IN CONSPIRACY THEORIES: MEDIATION EFFECTS OF COGNITIVE STYLES

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Previous research have shown that relations between Dark Tetrad traits and beliefs in conspiracy theories are mediated by tendency to have odd beliefs, be fatalistic, and distrust others. The aim of this study was to establish the direct effects of the Dark Tetrad traits on beliefs in conspiracy theories as well as the indirect effects via cognitive styles (rational and intuitive cognitive style). We expected to confirm direct effect of Dark Tetrad traits on beliefs in conspiracy theories among which Machiavellianism should have the most prominent effect. Furthermore, we expected the mediation effect of the intuitive cognitive style in the prediction of beliefs in conspiracy theories based on narcissism, psychopathy, and sadism. Based on previous research we did not have clear expectations regarding the rational style, but we could expect reverse pattern of effects compared to intuitive style or non-significant mediation effects. The study included 259 participants ( $M = 35.7$ ,  $SD = 12.2$ ) from the general population (55.6% females). Serbian adaptations of seven instruments were applied and collected online via the snowball method: Generic Conspiracist Belief Scale (GCBS), Conspiracy Mentality Questionnaire (CMQ), short form of Rational–Experiential Inventory (REI – Short form), Narcissistic Admiration and Rivalry Questionnaire (NARQ), Mach–IV, Levenson Self-Report Psychopathy Scale (LSRP), and Assessment of Sadistic Personality (ASP). The results of the mediation analysis performed in PROCESS macro showed that among the dark traits, Machiavellianism ( $\beta = .33$ ,  $p < .01$ ), primary psychopathy ( $\beta = .18$ ,  $p < .01$ ), and secondary psychopathy ( $\beta = .17$ ,  $p < .01$ ) had significant direct effects on conspiracy beliefs. Furthermore, the results showed significant indirect effects of Machiavellianism ( $\beta = .03$ ; 95%CI .002; .07), primary psychopathy ( $\beta = .02$ ; 95%CI .00; .05), secondary psychopathy ( $\beta = .06$ ; 95%CI .00; .12), and narcissistic rivalry ( $\beta = .03$ ; 95%CI .01; .07) on belief in conspiracy theories via lower tendency toward rational cognitive style, as well as of narcissistic admiration ( $\beta = -.04$ ; 95%CI -.08; -.01) via higher tendency towards rational cognitive style. Intuitive style did not emerge as a significant mediator, which was not expected. The results highlighted the Machiavellianism as the main correlate of conspiracy beliefs and lack of analytic thinking as the important mediator in relationships between dark traits and conspiracy beliefs.

**Keywords:** Dark Tetrad, Dark Triad, conspiracy theories, cognitive styles, mediation

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THE LATENT STRUCTURE OF TRADITIONAL, COMPLEMENTARY, AND  
ALTERNATIVE MEDICINE PRACTICES BASED ON PATTERNS OF USE

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Despite unknown efficiency, known risks, and associated adverse effects of certain traditional, complementary, and alternative medicine (TCAM) practices, the number of people using them appears to be on the rise. Existing taxonomies of TCAM practices mostly relied on either conceptual reasons, or they relied on attitudes toward TCAM, rather than its actual use. In this study, we sought to group TCAM practices based on their patterns of use. A sample of  $N = 583$  ( $M_{age} = 39.01$  years,  $SD_{age} = 12.10$ ; 74.4% females) participants residing in Serbia completed an online survey including a list of 71 TCAM practices. For each practice, they indicated if and when they used it to promote their own or their children's health (options: never heard about it/never used it/more than a year ago/in the past year/during the past two weeks). To evaluate the lifetime use of TCAM, we binarized all TCAM items to reflect whether participants have ever used a given practice (never using a practice was coded as 0, using it at least once as 1). After excluding items with frequencies below 5%, we performed an exploratory factor analysis on the tetrachoric correlation matrix for the remaining 49 items. Using a minimum residual method of extraction and oblimin rotation, we identified four meaningful factors explaining 42% of total variance: 1) Natural product-based practices (NP) comprising the use of products such as extracts and supplements of herbal and non-herbal origin; 2) Rituals/Customs (RC) which reflected the use of traditional medicine and religious practices, such as visiting monasteries; 3) New age medicine (NA) incorporating mind-body therapies and energy medicine practices; and 4) Alternative medical systems (AMS) such as acupuncture,

homeopathy, quantum medicine, and osteopathy/chiropractic. Factor correlations ranged from  $r = .18, p < .001$  for RC and AMS to  $r = .30, p < .001$  for NA and AMS. The latent structure we obtained based on the pattern of TCAM use corresponds closely to existing conceptual typologies, as well as to those based on attitudes toward TCAM. This suggests that consumers are sensitive to common characteristics of certain TCAM treatments and are more likely to resort to similar types of TCAM practices to promote their health. The existence of relatively independent factors of TCAM use opens the possibility of differential patterns of their psychological predictors and health-related outcomes.

**Keywords:** alternative medicine, traditional medicine, TCAM taxonomy, TCAM use, health behaviors

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TO PREVENT OR TO CURE: HOW PEOPLE USE TRADITIONAL,  
COMPLEMENTARY AND ALTERNATIVE MEDICINE

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To understand the reasons behind the trend of growing use of traditional, complementary and alternative (TCAM) practices we should first reflect on how people use them - to prevent disease/promote health, to treat medical conditions by complementing official medical treatments, or as an alternative to them. A total of  $N = 583$  ( $M_{age} = 39.01$  years,  $SD_{age} = 12.10$ ; 74.4% females) participants from Serbia completed an online survey including a list of 24

TCAM practices, grouped into four domains: Alternative Medical Systems (e.g., acupuncture, homeopathy), Natural product-based practices (e.g., herbal extracts/supplements), New Age medicine (e.g., yoga, mindfulness) and Rituals/Customs (e.g., visiting monasteries for health). Participants who indicated using a certain practice in the past year were asked to consider their most recent experience with that practice and choose only one option for how they used it: for preventive purposes/advancing health, at the same time with official medicine therapy, instead of official medicine therapy. Participants also provided information on whether a TCAM practitioner was involved in their last use of any of the TCAM practices and how often, in general, they consult TCAM practitioners. Overall, 63%, 95%CI [60, 65] of participants used TCAM practices for preventive purposes, 31% [29, 34] in parallel with, and 6% [5, 8] as an alternative to official treatments. Of the four domains of TCAM use, New Age medicine and Rituals/Customs were most frequently used for prevention, with 78% [74, 83] and 77% [72, 82], respectively, while Natural product-based practices were used for prevention in 57% [54, 60] and Alternative Medical Systems in 41% [33, 49] of the cases. Alternative use of TCAM practices was the most common in the case of Alternative Medical Systems (21% [14, 28]), while it amounted to no more than 7% of participants for any of the other domains. For 24% of participants, a TCAM practitioner was present during their last TCAM use, 10% reported a practitioner previously prescribing the practice, while 66% of participants reported no practitioner involvement. The results suggest the importance of treating different domains of TCAM practices separately, as they may have different impacts on people's health behavior. We especially point to the importance of monitoring adherence to alternative medical systems, as they may potentially distract patients from official therapies and thus further compromise their health.

**Keywords:** alternative medicine, traditional medicine, preventive TCAM use, alternative TCAM use, health behaviors

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## THE LINKS BETWEEN FUNDAMENTAL SOCIAL MOTIVES AND FERTILITY: A 42-NATIONS STUDY

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Fundamental Social Motives (FSM) represents an evolutionary-informed taxonomy of human motives and it is based on the following motivational forces: Self-Protection, Affiliation, Status Seeking, Mate Seeking, Mate Retention, and Kin Care. One of the major questions regarding FSM is whether they are associated with evolutionary fitness in modern humans; if they are, they could be targeted by natural selection and further evolve. The main goal of the current research was to produce estimates of the relations between FSM and fertility as an indicator of evolutionary fitness and analyze the potential moderating role of sex and environmental



conditions in the links between motives and reproductive success. We used publicly available cross-cultural data collected in 42 countries (<https://osf.io/p9z2a/>) to provide the answers to these questions. Generalized linear mixed models with random slopes were built to estimate the relations between motives and reproductive success as a measure of evolutionary fitness; socio-economic status was analyzed as a predictor as well. Sample size varied from  $N_{min} = 2036$  to  $N_{max} = 13555$  for different analyses due to data structure – Mate Retention motives were measured only in participants who were currently in a relationship and Kin Care for children was measured only in parents [ $M_{age} = 26.18$  ( $SD = 9.71$ )]; 63.7% females for the full sample). Fixed effects in fitted models showed that Kin Care Family has a positive contribution ( $B = 0.11$ ;  $p < .001$ ), while Affiliation Independence ( $B = -0.05$ ;  $p < .05$ ) and Mate Seeking ( $B = -0.19$ ;  $p < .001$ ) have a negative contribution to the prediction of fertility. Kin Care Children motive showed a significant positive fixed coefficient as well ( $B = 0.27$ ;  $p < .001$ ). The percentages of the criterion's explained variation were high in every prediction (ranging from 52% to 68%). There was also a variation in the slopes across the countries: Affiliation - exclusion concern ( $SD = 0.17$ ), Mate retention ( $SD = 0.16$ ) and Kin care for children ( $SD = 0.17$ ) showed the highest variations in slopes. Three significant interactions were obtained that further clarified the relations between FSM and fitness. The results suggest that FSM may still evolve in contemporary humans, with an emphasis on kin care, long-term mating, and self-protection in dangerous environments. The data provides new incentives for a behavioral ecological analysis of the motivational forces in humans.

**Keywords:** Fundamental Social Motives, reproductive success, kin care, mating, self-protection

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## PRELIMINARY VALIDATION OF THE NON-VERBAL PERSONALITY INVENTORY

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Despite the wide use of verbal personality questionnaires that are based on self-assessments of one's own characteristics, it is clear that such questionnaires still have certain limitations and shortcomings. One of the ways to overcome these shortcomings is the application of non-verbal forms of questionnaires, among which the most famous is the Five-Factor Nonverbal Personality Questionnaire (Paunonen, Jackson, & Ashton, 2004). Therefore, the aim of this research was to develop a new six-dimensional non-verbal pictorial personality inventory (NPPI) based on HEXACO model and to examine its metric characteristics after its first application. A total of 185 respondents of both sexes with an average age of 34.4 years ( $SD = 4.3$ ) took part in the research, filling out the newly constructed NPPI and a short questionnaire

on basic sociodemographic variables. The NPPI consist of 60 images/items (10 for each dimension/personality trait) and is intended for use in an adult population, especially in certain cross-cultural contexts and situations where language or reading comprehension is a problem. The images present one central character who behaves specifically in a certain situation, and the task of the respondents is to assess (on a scale of 1 to 5) the extent to which he can imagine himself as central character in described situation. In addition, part of the respondents ( $N = 108$ ) also completed the verbal HEXACO-60 questionnaire (Ashton & Lee, 2009). Also, part of the sample consisted of individuals in the clinical treatment of anxiety disorders ( $N = 25$ ), and part of individuals in a competitive selection situation for a job in an administrative position ( $N = 20$ ). Preliminary validation showed that the newly constructed NPPI exhibits good psychometric characteristics, including sensitivity (normal distribution of assessments for all dimensions/traits) and internal consistency type reliability ( $.71 < \alpha < .82$ ). The NPPI also shows satisfactory factorial validity, convergent validity compared to the assessments on the verbal HEXACO-60 inventory and concurrent validity (comparison of different groups). Correlations with correspondent measures on the verbal and non-verbal questionnaires range from .35 (agreeableness) to .70 (emotionality). As could be expected, higher scores are observed on personality traits that are desirable for the required job in individuals in selection situation, while higher scores are observed in individuals with anxiety disorders for emotionality.

**Keywords:** non-verbal personality inventory, HEXACO, psychometric validation

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## A DIFFERENT APPROACH TO MORAL IDENTITY MEASUREMENT

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Integrating the model of moral cognition and moral personality, Blasi developed a three-component model of moral action that includes moral self (salience of moral values), own responsibility (involvement of the moral self in decision-making) and self-consistency or moral integrity (decision-making in accordance with one's own moral values). Starting from this model, the aim of this research was to examine some psychometric features of the newly developed Moral Identity Questionnaire (MIQ). MIQ includes 63 short moral dilemmas that consist of two contrasted moral values (loyalty, freedom, concern for others, truth, respect, equality, responsibility) within the context of different complexity (light, medium, difficult) with regard to the outcome of the decision. The participant's task was to choose between two conflicted values and assess the degree of agreement with it. The study was conducted on a sample of 520 participants (388 women and 132 men), with an average age of 24.4 year ( $SD = 8.46$ ). Three questionnaires were applied: MIQ, Questionnaire of Comparing Moral Values in Pairs (participants should choose the one value that is more important to him from each pair of the seven values) and Questionnaire of some sociodemographic data. Two parameters were proposed as measures of moral identity: the strength of assessment that reflects the degree of

internalization of moral values (moral self) and the number of choices that reflects the consistency in choosing moral values (moral integrity). Convergent and concurrent validity were checked in the preliminary analysis. Correlations between moral identity measures and scores on the pairwise comparison questionnaire indicate satisfactory convergent validity only for number of choices parameter. Regarding the concurrent validity, no differences were found in the parameters of moral identity between the groups of participants with different volunteering experience, but differences were obtained in the both parameters with regard to the religious status of the participants. Believers achieve higher scores in both parameters for the values of loyalty, freedom and respect, while non-believers achieve higher scores for the values of truth and concern for others. Finally, the moral identity measures showed insignificant or weak correlation within different contexts (value choices strongly influenced by situational factors), that do not support Blasi's starting point that moral identity is a stable aspect of the self.

**Keywords:** moral identity, moral values, moral dilemmas, moral self

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UNDERSTANDING SENTIMENT TOWARDS RUSSIA-UKRAINE WAR: THE ROLE OF THE MILITANT EXTREMIST MINDSET (MEMS) AND BIG FIVE PERSONALITY

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Serbia's political positioning towards the Russia-Ukraine war is a highly contentious public issue and thus there is importance in understanding the factors that predict attitudes in this domain. In the current study we sought to examine individual differences in the sentiment towards the Russia-Ukraine war with a particular focus on Militant Extremist Mindset (subscales: Proviolence, Vile world, Divine power) and Big Five personality traits (Extraversion, Agreeableness, Neuroticism, Openness and Conscientiousness). The sentiment towards the war is operationalized through War Anxiety (WAS), positive and negative emotions in relation to war (self-reported on a Likert scale), accountability perceptions of different actors (Russia, Ukraine, NATO, EU, and USA) and attitude towards imposing sanctions against Russia. The data was collected in April 2022 by combining face-to-face and online surveying, on a two-stage stratified (region and education) random sample of 917 adults. The predictive power of personality predictors was tested after controlling for socio-economic variables (age, education, urbanization). A total of 8% of variance in war anxiety (WAS) can be explained with neuroticism ( $\beta_{WAS} = -.23, p < .01$ ), agreeableness ( $\beta_{WAS} = .13, p < .01$ ), and Divine power ( $\beta_{WAS} = .13, p = .01$ ). Emotions in relation to war can be explained by agreeableness, neuroticism, conscientiousness, Proviolence and/or Divine power (7% of variance in negative emotions and 16% of variance in positive emotions), with MEMS factors being particularly predictive for positive feelings in relation to war (13% of variance explained). Perceived accountability of the Ukraine, NATO, EU, and USA is positively predicted by Vile World ( $\beta = .33, p < .01$ , 10% of variance explained), while Russia's

accountability is negatively predicted by all MEMS factors (Providence  $\beta = -.14$ ,  $p < .01$ , Vile world  $\beta = -.12$ ,  $p < .01$ , Divine power  $\beta = -.18$ ,  $p < .01$ , 8% of variance explained). Agreeableness predicted positive attitude towards imposing sanctions against Russia, explaining 4% of variance ( $Wald = 5.35$ ,  $p = .02$ ). As expected, sentiment towards Russia-Ukraine war reflects personality traits typically predictive of political behavior and even greater extent radical and violent extremism mindset. Relatively small percentage of criteria explained variation suggests that the explanations of the war related attitudes should be expanded to the domain of more specific political attitudes, social identity, as well as social influence processes shaping public opinion.

**Keywords:** emotions, war anxiety, Big Five, Militant Extremist Mindset (MEMS), Russia-Ukraine War

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### IS AUTO-CHAUVINISM A MEASURABLE PSYCHOLOGICAL CONSTRUCT?

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The term “auto-chauvinism” gained much popularity in public and political discourse in Serbia in past years. It was mainly used to denote those individuals who express negative and sometimes extremely critical attitudes toward Serbian society. Until now, the phenomenon did not receive adequate psychologists’ attention. We aimed to understand the phenomenon better by constructing a scale to measure it, as the first step. The initial pool of over 200 items that could tap the auto-chauvinism comprised statements (e.g., “Others rightly see us as a wild people”) drawn from books, newspaper articles, and media appearances of those who labeled others as auto-chauvinists as well as those who were labeled this way. Eight researchers rated face validity, clarity, and formulation simplicity of all statements. After items with the lowest ratings were excluded, a set of 152 items was administered to the convenient sample ( $N = 890$ ; 59.3% females;  $M_{age} = 38.8$ ,  $SD_{age} = 12.8$ ) alongside right-wing (RWA) and left-wing authoritarianism (LWA) scales. Exploratory factor analysis with Promax rotation yielded four factors with high loadings ( $>.60$ ) on a higher-order factor we labeled In-Group Criticism (IGC): Auto-chauvinism (e.g., “Crime is in our genes”), Perception of in-group as hostile and intolerant to differences (e.g., “There is no culture of dialogue here”), Perception of in-group as authoritarian and corrupt (e.g., “All our heroes are war criminals”), and Rejection of conspiratorial interpretation of IGC (e.g., “Our fighters for democracy and the rule of law are

foreign mercenaries”). In the next step, we created a 40-item version of the scale (10 per component) by selecting the items with the highest loadings on the respective factors that simultaneously represent all levels of the assumed continuum of IGC according to the one-parameter logistic Item response theory model. Cronbach alpha of the total score was .95, and the reliability of subscales was .90 - .91. Bi-factor exploratory structural equation model, assuming the existence of a strong general factor and four residual factors, was found to be the most adequate ( $CFI = .936$ ,  $SRMR = .036$ ,  $RMSEA = .043$ ). The correlation of IGC with RWA was substantial ( $r = -.51$ ,  $p < .001$ ) but even higher with LWA ( $r = .64$ ,  $p < .001$ ). When it comes to sub-dimensions of RWA and LWA the correlation of IGC with LWA Anti-conventionalism was the largest ( $r = .74$ ,  $p < .001$ ). In sum, our results indicated that auto-chauvinism could be seen as a part of general IGC tendencies that are measurable by the proposed, psychometrically sound instrument.

**Keywords:** auto-chauvinism, in-group criticism, exploratory factor analysis, psychometric properties

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“THERE’S NO ONE WORSE THAN US”: THE CONSTRUCT VALIDITY OF THE  
INGROUP CRITICISM SCALE

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The study aims to establish the nomological network of Ingroup criticism (IGC), a novel construct conceptualized as a propensity to be critical toward one’s own society. This encapsulates negative attitudes toward authoritarian, nationalistic, and parochial social and political practices, as well as extremely negative prejudices, hatred, and intolerance toward one’s own national group. We examined its relationships with a broad spectrum of constructs classified into eight blocks: socio-demographic variables, personality traits and related variables, thinking styles and dispositions, socio-political attitudes, prejudice, moral sensitivity, free market ideology, and ethnocentrism. IGC was assessed via the previously developed 40-item Ingroup criticism scale. The scale consists of four subscales (Autochauvinism, Perception of in-group as intolerant and hostile, Perception of in-group as authoritarian and corrupt, Rejection of conspiratorial interpretation of IGC). The sample ( $N = 806$ ; 44.9% women;  $M_{age} = 40.99$ ,  $SD_{age} = 13.56$ ) was drawn from the general population and recruited via social network platforms. To examine the relations between constructs, we

conducted an eight-step hierarchical regression analysis with our general factor (i.e., Ingroup criticism) as a criterion and the aforementioned eight blocks of variables as predictors. All blocks (except free market ideology) contributed significantly to this prediction. The sociodemographics explained 1.5% of variance ( $F_{(5, 800)} = 2.52, p = .028$ ), personality traits and related variables 10.9% ( $F_{(11, 789)} = 8.91, p < .001$ ), thinking dispositions and styles 5% ( $F_{(4, 785)} = 12.26, p < .001$ ), socio-political attitudes 16.6% ( $F_{(4, 781)} = 49.26, p < .001$ ), moral sensitivity 11.7% ( $F_{(2, 779)} = 84.14, p < .001$ ), prejudices 4.4% ( $F_{(1, 779)} = 69.39, p < .001$ ), and ethnocentrism 18.1% ( $F_{(2, 774)} = 222.9, p < .001$ ). The overall percentage of explained variance amounts to 68.6%. Our results show that those prone to IGC tend to be low on ethnocentrism and national pride, to strongly adopt democratic values, are sensitive moral progressivists (morality based on fairness and care), not prejudiced, conscientious, but with slightly elevated Disintegration, proneness to anger, dissatisfaction with life, and need for closure. We discuss the position of IGC at the crossroad of personality and sociopolitical attitudes.

**Keywords:** ingroup criticism, basic personality traits, socio-political attitudes, thinking dispositions and styles, moral dispositions

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REI-8: DEVELOPMENT OF A VERY BRIEF VERSION OF RATIONAL-EXPERIENTIAL INVENTORY USING ANT COLONY OPTIMIZATION PROCEDURE

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The Rational-Experiential Inventory-40 (REI-40, Pacini & Epstein, 1999), proposed in the framework of the cognitive-experiential self-theory (CEST) is a widely used instrument for measuring thinking styles. Similar to other dual-processing models, CEST distinguishes between automatic, effortless, rapid (experientiality) and conscious, analytical, effortful, slower (rationality) thinking styles. A short version, REI-10, has already been proposed (Epstein et al., 1996), however, it is based on an outdated REI version and is not compatible with REI-40. There are also modified versions of REI which attempt to capture facets of experientiality, but REI-40 is still used more often than other versions. In the current study we aimed to provide a brief version of REI-40 by employing an Ant Colony Optimisation (ACO) algorithm (Leite et al., 2008; Marcoulides & Drezner, 2009). We used an existing dataset, collected in the Serbian validation of REI-40 (Purić & Jokić, 2022), comprising  $N = 813$  students, 68% females,  $M_{age} = 19.79$  ( $SD_{age} = 1.85$ ). We used the ACO procedure to select four items per each REI scale - Rationality and Experientiality, so as to maximize both confirmatory factor analysis model fit, indicated by high Comparative Fit Index (CFI) and low Root Mean

Square of Approximation (RMSEA), and high reliability. The resulting instrument, REI-8 demonstrated good model fit:  $CFI = .99$  and  $RMSEA = .062$ , 95% CI [.048, .076], as well as reliability - Cronbach's alpha was .75 for both Rationality and Experientiality, while McDonald's omega was slightly higher at .78 for both REI-8 scales. The correlations between REI-8 scales and corresponding REI-40 scales were very high,  $r = .82$  and  $r = .84$ , for rationality and experientiality, respectively, and the two dimensions were practically uncorrelated  $r = .04$ , as the CEST model proposes. Overall, we have constructed a very brief 8-item version of REI which is both reliable and structurally valid. This instrument could be used in large-scale studies where time is limited.

**Keywords:** thinking styles, Rational-Experiential Inventory, rationality, experientiality, Ant Colony Optimization procedure

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## THE VALIDATION STUDY OF GENERAL ANIMISM SCALE

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We developed a new concept of general animism that integrates all previous conceptualizations of animism. General animism discerns three types of animisation: *Animistic error*, the attribution of life and psyche to entities without it; *Ecological animism*, an interpersonal relationship with environment; and *Metaphysical animism* – beliefs that everything has consciousness. We developed a 30-item scale to measure general animism (GAS). Showing good psychometric properties (e.g.,  $\alpha = .95$ ), we tested the validity of GAS on convenient sample ( $N = 428$ ; 63.6% women;  $M_{\text{age}} = 28.41$ ,  $SD_{\text{age}} = 14.28$ ) alongside other animism (Adult animism scale - ASA; Anthropomorphism scale, IDAQ; Ontological confusion questionnaire, OCQ) and personality scales (HEXACO-PI-R; Disintegration scale, DELTA9). To validate GAS, Exploratory Factor Analysis (EFA) should yield three lower-order factors, that correspond to our animism types, and one higher-order factor. Lower factors should show strong positive associations with other animism scales, and no or weak correlations with personality traits, with the strongest positive one being with disintegration. EFA, with Oblimin rotation and maximum likelihood extraction, yielded three lower-order factors - Animisation of nature (AN), Animisation of artificial entities (AE), Animisation of universe (AU) - that load onto a higher-order factor we labeled "General animism". Upon analysis, it was evident that our factors formed according to the object of animisation rather than type. AN, AE, and AU had moderate to high association with ASA ( $r$  ranging from .43 to .78, all  $ps < .05$ ), IDAQ ( $r$  ranging from .39 to .59, all  $ps < .05$ ) and OCQ ( $r$  ranging from .49 to .57, all  $ps < .05$ ), while correlations with other personality traits were expectedly low or insignificant ( $r$  ranging from .01 to .23; some  $ps < .05$ ) showing good convergent validity of GAS. Criterion validity was

further tested via six multiple regression analyses, with our lower-order factors as predictors and six variables of relevant everyday behaviors as criteria. Analyses showed good predictive power of GAS, with spent time in nature being predicted by AN ( $\beta = .31, p < .01$ ), animisation of one's own electronics by AE ( $\beta = .47, p < .01$ ), and reading about ecology by AU ( $\beta = -.21, p < .01$ ). Overall, GAS showed excellent validity. Interestingly, objects of animisation are empirically more relevant than types. This should be the focus of future research on animism.

**Keywords:** General animism scale, validation, psychometric properties, basic personality traits

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## INITIAL INSIGHTS INTO LATENT STRUCTURE OF INTELLECTUAL VIRTUES

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Intellectual virtues are epistemic tendencies that lead to the most desirable outcomes in knowledge acquisition and management. Among the many intellectual virtues proposed by philosophers, only a handful was empirically studied (i.e., intellectual humility). In the present study, we explored the latent structure of a broader spectrum of intellectual virtues. Based on a literature review, we identified the 10 most prominent intellectual virtues: Authoritarianism, Autonomy, Charity, Curiosity, Generosity, Justice, Scrutiny, Stability, Temperance, and Tolerance. By treating each virtue as an indicator, we constructed a questionnaire with 52 items. Responses were provided on a 5-point Likert scale. We explored the factor structure of our questionnaire on a convenient sample of  $N = 261$  Serbian online volunteer participants (77.8% female,  $M_{\text{age}} = 33.87$  ( $SD_{\text{age}} = 13.80$ )). Based on a Principal component analysis of each of the virtues, we removed the items that were compromising their one-dimensional structure or internal consistency, and retained 40 items. We kept a minimum of three items per virtue, allowing each of them to form an independent factor. We proceeded to run an Exploratory factor analysis (Maximum likelihood, Promax rotation), which indicated a five-factor solution, based on parallel analysis and inspection of the scree plot. We then removed all items with loadings under .30, the items with secondary loadings over .30, or had uniqueness above .90, thus reaching a simple five-factor structure that explained a total of 27.79% of the variance. We interpreted these factors as broad dimensions of intellectual virtues called Intellectual Benevolence-Malevolence (with low scores indicating enjoyment, and high scores indicating annoyance when in touch with intellectual content;  $\alpha = .71$ ), Incuriosity-Curiosity (ranging from very low to almost intrusive interest in various contents and knowledge seeking;  $\alpha = .61$ ), Flexibility-Rigidity (ranging from docility when it comes to opinion or knowledge to a stubborn refusal of their change;  $\alpha = .66$ ), Generosity-Selfishness (ranging from an extreme willingness to extreme reluctance to share their knowledge;  $\alpha = .64$ ), Autonomy-Authoritarianism (ranging from extreme independence to extreme reliance on others while acquiring knowledge;  $\alpha = .62$ ). The present results indicate that a number of proposed



intellectual virtues could be reduced to fewer fundamental dimensions constituting a core of intellectual virtuousness.

**Keywords:** intellectual virtues, virtue epistemology, intellectual humility, factor analysis, latent structure

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LIAR, LIAR: THE DARK TETRAD AND SELF-PERCEIVED ABILITY TO TELL AND TO DETECT LIES

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The Dark Tetrad consists of four socially aversive, but subclinical traits: narcissism, Machiavellianism, psychopathy, and everyday sadism. Since all these traits are characterized by a tendency to manipulate others, the present study aimed to examine their relationship with self-rated lying ability and the ability to detect lies. Data were collected on a convenience sample of 439 participants (15.5% male;  $M_{\text{age}} = 25.42$ ,  $SD_{\text{age}} = 7.94$ ) and online within a larger project. Dark personality traits were measured using Short Dark Tetrad (SD4), and alpha reliabilities ranged from .68 to .77. Participants were asked to rate their lying ability and the ability to detect lies (both compared to others) on a scale ranging from 1 (much worse) to 11 (much better). They were also asked to indicate the estimation of the percentage of their undiscovered lies. At the level of bivariate relationships, all dark traits were positively associated with lying ability, and all dark traits except Machiavellianism were positively associated with the ability to detect lies. The percentage of undiscovered lies was significantly positively associated with Machiavellianism and sadism. To examine the contribution of dark traits to the explanation of self-rated lying ability, ability to detect lies, and percentage of undiscovered lies, hierarchical regression analyses were performed, with sex and age entered at the first, and dark traits entered at the second step of analyses. Variance explained by dark traits, over and above age and sex, was 13.1% for lying ability,  $F(4, 425) = 17.04$ ,  $p < .001$ ; 8.5% for ability to detect lies,  $F(4, 426) = 9.95$ ,  $p < .001$ ; and 3.4% for the percentage of undiscovered lies,  $F(4, 422) = 93.74$ ,  $p = .005$ . Sadism ( $\beta = .26$ ,  $t = 4.73$ ,  $p < .001$ ), followed by narcissism ( $\beta = .18$ ,  $t = 3.73$ ,  $p < .001$ ) were significant positive predictors of lying ability. These two dark traits were also significant positive predictors of the ability to detect lies, with narcissism ( $\beta = .25$ ,  $t = 4.87$ ,  $p < .001$ ) being a stronger predictor than sadism ( $\beta = .12$ ,  $t = 2.06$ ,  $p = .040$ ). Finally, only higher sadism was predictive for a higher percentage of undiscovered lies ( $\beta = .15$ ,  $t = 2.44$ ,  $p = .015$ ). Findings concerning narcissism are in line with expectations, while the role of sadism in explanation of self-perceived lying abilities and the ability to detect lies is far more interesting. Taken together, results point to distinctiveness of narcissism and sadism in dark personality space.

**Keywords:** Dark Tetrad, self-perceived lying ability, self-perceived ability to detect lies

DISTINCTION OF SPIRITUALITY AND RELIGIOSITY AT THE LEVEL OF SACRAL PRACTICES

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For more than 100 years, psychologists have differentiated religiosity and spirituality at a conceptual level. Religiousness is acceptance of traditional communal religious beliefs and practices, while spiritualism is a quest for meaning and truth, a sense of connectedness with the social and natural world, and contemplations of oneself. Recent psychometric empirical evidence confirmed they are independent psychological dispositions. In this study we build up on the empirical evidence on religiosity and spirituality as different constructs by operationalizing them not just as beliefs but also as practices. We hypothesis religious beliefs should predict only religious practices, and spiritual beliefs spiritual practices. To measure beliefs, we have used 16-item subscales of questionnaire Lexical social attitudes - Serbia. Summary scores for both subscales are highly reliable ( $\alpha_{REL} = .93$ ,  $\alpha_{SPIR} = .88$ ). To measure practices we constructed a questionnaire for this study. On a binary scale (yes or no), participants assessed if they had done at least once in the previous year each of the ten traditional religious practices (e.g., prayed, confessed, read a holy book) and ten spiritual practices (e.g., spent time in nature, made art, wrote a diary). Reliability of summary scores is not satisfactory neither for the scale of religious practices ( $\alpha = .63$ ) nor spiritual ( $\alpha = .58$ ), so one should take caution with interpreting the results. In an online survey, 197 participants (70.0% women,  $M_{age} = 19.47$ ,  $SD_{age} = 5.43$ ), filled questionnaires. Orthodox Christians comprised 70.1%, followed by atheists 14.2%, and 11.2% agnostics. To test the hypothesis, we derived a canonical correlation between beliefs on one side and practices on the other. The first canonical correlation ( $R = .66$ ,  $F_{(4,386)} = 43.00$ ,  $p < .001$ ) describes religious people ( $b = .98$ ) who follow religious practices ( $r = .92$ ) but decline spiritual ( $r = -.41$ ). The second one ( $R = .38$ ,  $F_{(1,194)} = 33.95$ ,  $p < .001$ ) describes spiritual people ( $r = .98$ ) who in order to find meaning and truth engage in spiritual practices ( $r = .91$ ) and religious too some extent ( $r = .39$ ). Results are in line with conceptualizing religiosity and spirituality as different constructs, but results eject orthogonality. Spiritualism manifests through spiritual beliefs and diverse practices that provide sense of connectedness with the social and natural world and contemplations of oneself, unlike rigid religiosity.

**Keywords:** traditionalism, religiousness, spiritualism, transcendentalism, individual differences

Syntax, data and materials are at <https://osf.io/4vspz/>.

*DEVELOPMENTAL PSYCHOLOGY*

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CONSTRUCT AND PREDICTIVE VALIDITY OF THE DIFFERENTIATION OF THE  
SELF INVENTORY ON UNIVERSITY STUDENTS IN SERBIA

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As a developmental concept introduced by Bowen, differentiation of self points to a capability of distinguishing between intellectual and emotional processes behind personal experiences. The dominance of emotions manifests through dysfunction under stress, dependence on others, dissatisfaction with oneself, and fear of commitment; this could result in well-being difficulties, e.g., anxiety and depression. The present research aimed to validate the Differentiation of the Self Inventory (DSI, 46 items, Likert 1-6) in a Serbian sample of university students. The sample consisted of 364 emerging adults aged 18 to 30 ( $M = 21.44$ ,  $SD = 2.36$ , 81.3% female). Items theoretically distribute on four subscales - Emotional reactivity (ER, 11 items), "I" Position" (IP, 11 items), Emotional Cutoff (EC, 12 items), and Fusion with Others (FO, 12 items). Initially, 12 factors were extracted using exploratory factor analysis (Principal components analysis, Promax rotation). Horn's Parallel Analysis method suggested 6 factors should be kept. However, by examining the Structure and Pattern Matrices, we concluded that the four-factor solution would give the most interpretable results (38.66% of variance explained) and decided to use predefined summary scores. Psychometric properties of each subscale were on a satisfactory level (ER:  $\alpha = .84$ ; IP:  $\alpha = .75$ ; EC:  $\alpha = .82$ ; FO:  $\alpha = .73$ ). Construct validity was checked via confirmatory factor analysis ( $\chi^2(973) = 2519.60$ ,  $p < .00$ ,  $RMSEA = .066$ ,  $NFI = .619$ ,  $CFI = .723$ ). After connecting similar origin errors, the results indicated that the given model needs further improvement. The predictive validity of the DSI scale was examined by Depression Anxiety Stress Scale (DASS-SER, 42 items, Likert 0-3) and a well-being measure from Flourishing Scale (FS, 8 items, Likert 1-7). Predictors were scores on DSI subscales and criteria scores on DASS and FS scales. Results from regression analyses were on a satisfactory level (D:  $R^2 = .41$ ,  $F(4,355) = 60.60$ ,  $p < .00$ ; A:  $R^2 = .30$ ,  $F(4,355)=37.87$ ,  $p < .00$ ; S:  $R^2 = .35$ ,  $F(4,355) = 47.55$ ,  $p < .00$ ; FS:  $R^2 = .37$ ,  $F(4,355) = 52.23$ ,  $p < .00$ ), making differentiation of self a good predictor of depression, anxiety, stress, and well-being. In conclusion, the number of extracted factors remains debatable, but the instrument shows solid psychometric characteristics. Although some parameters limit the construct validity, the predictive validity and other presented results suggest that this instrument could be used in further research as a comprehensive measure.

**Keywords:** differentiation of self, validation, well-being, anxiety, depression, emerging adults

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EXPLORING THE CHARACTERISTICS OF EMERGING ADULTHOOD IN SERBIA:  
VALIDATION ANALYSIS OF THE IDEA SCALE

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At the end of the last century a new developmental period spanning between the ages of 18 and 29 was introduced into psychology by Arnett (Arnett, 2006). This period between adolescence and adulthood is said to have appeared as a consequence of the social and economic changes that occurred during the 1960s which led to a prolonged transition to adulthood. Arnett recognized six characteristics of this period that contribute to its distinction from adjacent developmental periods – identity exploration, instability, feeling in-between, experimentation, focus on others and focus on self. The Inventory of Dimensions of Emerging Adulthood (IDEA) (Reifman et al., 2007) was constructed to measure these six factors. The aim of this study was to explore whether the proposed characteristics occur among Serbian emerging adults and to examine the features of emerging adulthood among the Serbian youth. The sample was collected via internet (snowball method) and consists of 1288 young people (77.8% women,  $M_{age} = 23.78$ ). An exploratory factor analysis revealed five significant factors which explained 54.6% of total variance. Three of our factors corresponded to Arnett's original factors (Experimenting, Instability, Focus on others). Our fourth factor included Feeling in-between, as well as some items salient on the Identity exploration factor, while our fifth factor included both Identity exploration and Focus on self. Evidently, Identity exploration can not be constituted as a factor on a Serbian sample so in addition to the three confirmed factors, we propose two factors specific to the Serbian sample - Finding yourself and Self-reliance. Furthermore, to test the predictive validity of the five factors of the IDEA scale on our sample, we conducted four multiple linear regressions using the factors as predictors and the four dimensions of the Markers of Adulthood scale (Sharon, 2016) as the criteria. Results showed all but one of the regression models were significant, with all five of our factors significantly predicting Role transitions ( $F(5) = 66.153, p < .01$ ), Independence ( $F(5) = 65.925, p < .01$ ) (except Experimenting), and Relation maturity ( $F(5) = 44.771, p < .01$ ) (except Self-reliance), but none predicted Norm compliance ( $F(5) = .167, p = .975$ ). These results indicate that IDEA can successfully predict markers of adulthood and confirm the predictive validity of the proposed five factor structure of the characteristics of emerging adulthood on a Serbian sample.

**Keywords:** emerging adulthood, IDEA scale, exploratory factor analysis, markers of adulthood

RISK BEHAVIOR, ROMANTIC RELATIONSHIPS, FUTURE ANXIETY AND GENDER DIFFERENCES IN THE EMERGING ADULTHOOD PERIOD

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The aim of this study was to assess characteristics, attitudes and behaviors of emerging adults in Serbia. Emerging adulthood represents a period between the ages of 18 and 29, that is the period between adolescence and adulthood. Here we present a part of results with the focus on risk behavior, romantic relationships, future anxiety and gender differences in these aspects in the emerging adulthood period. The sample of 1288 young people (77.8% females,  $M_{age} = 23.78$ ) completed questionnaires about the demographics, lifestyle, experiences, behaviors, attitudes relevant for the description of this period. We chose to focus on these aspects due to the fact that some of the attributes of the emerging adulthood are identity exploration in terms of love and risk behavior and uncertainty about future. First of all, we did several factor analyses on the results obtained through the questionnaire, to conduct if there were any generalized factors regarding the aforementioned variables. Maximum Likelihood Analyses, with Promax rotation, showed that we can extract two factors in attitudes about sex (Sex as emotional behavior, Sex as adventure), two factors about anxiety towards life (Anxiety about world future, Anxiety about personal future) and two factors about importance of intimacy in relationships (Importance of emotional understanding, Importance of physical connection). Males scored higher on the factor Sex as adventure ( $t(940) = -8.815, p < .01, d = .687$ ), but there were no differences on Sex as emotional behavior factor. Males scored higher on risky behavior: they drank too much ( $t(1002) = -3.17, p < .01, d = .173$ ), consumed marihuana ( $t(1003) = -4.68, p < .01, d = .377$ ), consumed drugs ( $t(1004) = -4.19, p < .01, d = .165$ ), drove under the influence of alcohol ( $t(1004) = -4.74, p < .01, d = .118$ ). Females scored higher on both factors regarding the importance of intimacy in relationships. Females reported that they had more stable relationships than males ( $t(982) = 3.14, p < .01$ ), and were more anxious about the future, scoring highly on both factors ( $t(1039) = 4.2, p < .01, d = .318$ ;  $t(1039) = 3.04, p < .01, d = .232$ ). Significant, though negligible correlations were obtained between: anxiety about personal future with stability of relationships ( $r = -.124, p < .01$ ) and financial situation with anxiety towards one's own life ( $r = -.244, p < .01$ ). There were no significant relations between anxiety towards life factors and risky behavior. We discuss results that we obtained and possible theoretical and practical implications of our findings.

**Keywords:** emerging adulthood, risk behavior, romantic relationships, future anxiety, gender differences

GENDER AND AGE DIFFERENCES IN LONLINESS OF ADOLESCENTS RESIDENTS  
SHELTERS' SERVICES

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In the period of adolescence intense developmental changes occur, the most visible of which are those that occur at the level of socio-emotional development, as well as changes regarding relationships with family and friends. The closest relationships are with friends, while in relation to the family there is an ambivalent need for individualization on the one hand, and on the other hand the need for protection from parents. (Steinberg & Morris, 2001). Adolescents who live in the shelter have negative experiences, including inadequate parental care, experience of violence, abuse or human trafficking, which is shown to be a predictor of loneliness (Mahom et al, 2006). As the research also talks about gender and age differences in the experience of loneliness (Chipuer & Pretty, 2000), the aim of this research is to examine the gender and age differences in the loneliness of the mentioned population. Furthermore, 150 adolescents who are living or have lived in shelters services that are located in the Republic of Serbia have participated in this research. The period of collecting data lasted from January to March 2021. As a tool for collecting data the UCLA Loneliness Scale Short Form (UCLA, University of California Los Angeles Loneliness Scale) was used. The reliability of the instrument (Crobach's alpha) on this sample is 0,78. There are no significant differences in a feeling of loneliness of our respondents when we take gender into the account ( $t = 0.31(136)$ ;  $p \leq .77$ ,  $d = .76$ ) while there are age differences. Younger adolescents (aged 14-15) experience higher levels of loneliness than older ones (aged 16-17), ( $t = 3.61(136)$ ;  $p \leq 0.05$ ,  $d = .57$ ). The obtained findings are in accordance with previously researches. They say that younger adolescents feel more lonely than older ones when it comes to the general population (Brage & Meredith, 1993; Chipuer & Pretty, 2000). This results can be explained by the fact that in the period of early adolescence, identity building processes, self-confidence and self-esteem, as well as self-reflection and the need for acceptance by peers. In addition, the described processes are largely moderated by the earlier experience of acceptance, including by parents. Additionally, the results can be illustrated by the development of a support network, which implies that the older adolescents have better developed and richer support networks when compared to younger ones, which in turn enables them to have more and at the same time better interactions. The findings point to the conclusion that it is necessary to develop a greater number of support programs and a qualitatively different approach to younger adolescents who are users of the shelters' services compared to older adolescents.

**Keywords:** loneliness, adolescence, gender differences, age differences, shelter service

HOW CAN WE EMPIRICALLY EXPLORE ADOLESCENT IDENTITY CO-CONSTRUCTION? DISCURSIVE APPROACH TO POSITIONING ANALYSIS AS A METHODOLOGICAL CONTRIBUTION TO SOCIOCULTURAL PSYCHOLOGY

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The fundamental assumption of sociocultural psychologists studying narrative identity development is that individual identity is co-constructed, i.e., a product of social relations. Characteristics of this process of co-construction are, nevertheless, empirically underexplored, and this gap is especially prominent in the studies of adolescent identity. The “Big story” approach, dominant in the field, advocates individual interviews and the use of retrospective data in order to examine already established identity positions. Alternatively, psychologists observe participants’ interactions or experimentally manipulate them in order to quantify the aspects of the storyteller’s self-narrative and to correlate them to the listener’s reactions. What is missing are methodological tools that would enable researchers to examine qualitative aspects of the process of adolescent identity co-construction during interaction. In the last 20 years, the “Small story” approach has emerged within narrative psychology and it focuses on the microgenetic processes of identity development. These processes refer to the progressive sedimentation of interactive sense-making through negotiation in which various identity positions get tried out, resisted, or adopted. This paper builds on methodological resources advanced by the “Small story” approach and further develops them, with the aim to offer a methodological framework for analyzing identity co-construction. The framework entails three levels of interaction analysis, each posing different analytical questions. The first level utilizes resources of conversation analysis and focuses on the formal aspects of interaction in order to answer how the participants achieve shared understanding and demonstrate affiliation. The second level pertains to discourse analysis of strategies, demonstrating how participants negotiate and which devices they use to impose their own morally defensible account. The third level uses positioning analysis (supplemented by the ethnomethodological membership categorization analysis), aimed at determining which identity positions are co-constructed and made available by the form of interaction and strategies employed. The practical application of this framework will be demonstrated to show the usefulness of presented methodological tools for sociocultural studies of identity exploration in adolescence, especially when these “Small story” resources are combined with the “Big story” methodology.

**Keywords:** narrative psychology, adolescent identity development, peer interactions, discourse analysis, positioning analysis



IN SEARCH OF AN EXPLANATION OF VIOLENT BEHAVIOUR: A MEDIATING  
MODEL OF PERSONALITY TRAITS, EMPATHY AND BULLYING

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Recently, we experienced a scene where three pupils bullied their teacher in a high school in Serbia. Unfortunately, this is no rare sight. Bullying represents a big social problem in Serbia - more than 60% of pupils are experiencing some form of bullying or participate in it. Earlier empirical studies showed that there are some psychological traits and variables that can successfully predict bullying behaviour. The main goal of this research was to create a comprehensive mediating structural model which would explain individual differences in school bullying using various psychological variables: basic personality traits from the HEXACO model, dark personality traits from the Dark Tetrad and empathy. We initially hypothesised that Empathy can be a mediating variable between personality traits and bullying behaviour. Instruments that we used were HEXACO-60 ( $\alpha = .562-.705$ ), Short dark tetrad ( $\alpha = .553-.796$ ), Shortened Empathy Quotient ( $\alpha = .851$ ) and Bullying Participant Behaviour Questionnaire ( $\alpha = .739$ ). The research was conducted on a sample of 245 Serbian high school girls and boys (75.1% females;  $M_{age} = 16.3$ ,  $SD_{age} = 1.1$ ). The originally assumed model did not prove to be adequate, and improvements to the given model have been considered. The model that had good fit ( $\chi^2(4) = .975$ ,  $p = .914$ ) consisted of two predictors, which were interrelated, and a criterion, which was Bullying. First predictor was a latent variable consisting of Honesty, Psychopathy and Sadism which we called “Dark Personality Structure” (DPS). Honesty negatively contributed, whereas Psychopathy and Sadism positively contributed to the DPS. Empathy was a manifest variable, and so was Bullying. Latent variable DPS positively predicted Bullying ( $\beta = .496$ ) and Empathy negatively predicted Bullying ( $\beta = -.137$ ). The question arises whether it is adequate to view empathy as the mediating variable between personality traits and bullying, as is discussed that empathy can be considered to be a basic prosocial mechanism. Bullying in schools represents an important social problem from which many children and young people suffer and which can cause consequences for their development and mental health. We think that determining the predictors behind this problem is of great practical importance in order to prevent and solve this problem in time.

**Keywords:** bullying, adolescents, dark tetrad, empathy, HEXACO

RELATION BETWEEN GENERAL EMOTIONAL REGULATION AND MOOD  
REGULATION THROUGH MUSIC: CONCEPTUAL CONSIDERATIONS

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Emotional and mood regulation through music listening is one of the most important functions of music in the emerging adulthood period (Schäfer et al., 2013). In the present study we examined the relationship between mood regulation through music measured by the Music in Mood Regulation (MMR) scale (Saarikallio, 2008) and perceived emotional intelligence, measured by the Trait Meta-Mood Scale (TMMS) (Salovey et al., 1995). MMR Scale included seven strategies of emotion regulation through music (Entertainment, Revival, Strong Sensation, Diversion, Discharge, Mental Work and Solace) and TMMS included three perceived skills in emotional functioning (Attention, Clarity and Repair). The sample consisted of 507 participants (emerging adults, 61.3% females; age:  $M = 22.8$ ,  $SD = 2.9$ ) and was collected using the snowball method, via social networks. A canonical correlation analysis was conducted using the three perceived skills in emotional functioning as predictors of the seven musically-related mood regulation variables. The analysis yielded total of three functions with statistically significant model using the *Wilks's*  $\lambda = .718$  criterion ( $F(21, 1427) = 8.300$ ,  $p < .001$ ). Model explained about 28% of the variance shared between the variable sets indicating that instruments based on these two constructs target highly different phenomena from the field of emotional regulation, which is revealed in the low canonical correlations between them (.40, .34 and .17, respectively). Given the effects for each function, only the first two functions were considered noteworthy (16.3% and 11.6% of shared variance). The first canonical correlation reflected the relation between low Attention and low Repair with low six out of seven music-related strategies (with the exception of Discharge). The second canonical correlation represented the relation between low Attention and high Repair with low Discharge. Redundancy analysis showed that two canonical variates extracted from TMMS scales reproduced 8.3% of the variance in the MMR scales. The results of this study suggested that general mood regulation differs from mood regulation through music, which is a special form of mood regulation that occurs in a particular medium and possibly with different underlying operating mechanisms. The importance of the findings for the conceptual considerations of mood regulation through music will be additionally discussed.

**Keywords:** music, mood regulation, emerging adulthood, perceived emotional intelligence

DIFFERENCES IN PHYSICAL SELF-EFFICACY OF YOUNG ATHLETES IN  
RELATION TO GENDER, SPORT AND AGE

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Adolescence is a significant period for the formation of self-concept, as well as physical self-concept. The experience of physical self-efficacy is important for the development of young athletes and their athletic outcomes. Belief in physical self-efficacy contributes to greater sports self-confidence, as well as satisfaction of the need for competence. The aim of this research is to examine the differences in physical self-efficacy of young athletes in relation to gender, age and type of sport they practice. The sample consisted of 258 participants (50.8% boys), aged 11 to 17, from the territory of Vojvodina, who actively play organized sports (handball, volleyball, and basketball) in different sport clubs. Physical Self-Efficacy Scale (PSE) was used, which consists of two dimensions: Physical Ability (PA) and Physical Self-Presentation Confidence (PSPC). The results of the T-test for independent samples show that there is no statistically significant difference by gender in PA ( $t(244) = 0.29, p = 0.33, d = 0.04$ ) and PSPC ( $t(242) = 0.48, p = 0.92, d = 0.06$ ), nor by type of sport they practice ( $PA p1 = 0.18; PSPC p2 = 0.09$ ). However, after performing additional analyzes divided by gender, using the Kruskal-Wallis test, a statistically significant difference was obtained between the type of sport they practice and two dimensions of physical self-efficacy ( $p1 = 0.01$  and  $p2 = 0.02$ ), in favor of female handball players. When it comes to age differences, the results obtained using Spearman's correlation show that there are no statistically significant differences ( $p1=0.31$  and  $p2 = 0.24$ ), but that a certain developmental trend can be observed where PA and PSPC are highest during late adolescence, while fluctuating during early and middle adolescence. Handball is a dynamic contact sport and requires considerable physical strength and a sense of physical competence in order for athletes to enter a duel with opponents, therefore it is not surprising that female handball players achieve higher scores on the dimensions of physical self-efficacy. The obtained results represent the basis for further research in order to determine the importance of physical self-efficacy for sports outcomes in young athletes.

**Keywords:** young athletes, sport psychology, physical self-efficacy, physical self, adolescence

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WHO IS MORE IMPORTANT FOR PHYSICAL SELF-EFFICACY IN YOUNG  
ATHLETES - MOTHER OR FATHER?

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During adolescence, parent-child relationship goes through changes, but still has influence on the formation of self-concept. In sports, they play a significant role in forming the attitudes and beliefs of young athletes about the sport itself and themselves. The aim of the research is to examine the relationship between the motivational climate created by parents on the physical self-efficacy of young athletes, and a relationship between the parents' previous sports involvement and the physical self-efficacy of young athletes. The sample consisted of 258 participants (50.8% boys), aged 11 to 17, from the territory of Vojvodina, who actively play organized sports (handball, volleyball, and basketball) in different sport clubs. Physical Self-Efficacy Scale (PSE) was used, which consists of two dimensions: Physical Ability (PA) and Physical Self-Presentation Confidence (PSPC), and Perceived Motivational Climate in Sport Questionnaire 2 (PIMCQ-2), which consists of three subscales in this sample: Learning (task-oriented motivational climate), Concern about failure (ego-oriented motivational climate) and Achieving effortless success (ego-oriented motivational climate). The results of the regression analysis, where subscales of motivational climate represented predictors, show that this model is statistically significant ( $F(6,217) = 5.84, p = .001$ ) and explains 14.2% of PA, and ( $F(6,212) = 4.12, p = .001$ ) 10.7% of PSPC. Task-oriented motivational climate created by mother stands out as a significant individual predictor of PA ( $\beta = .332, p = .001$ ). The results show that the mother's previous sports involvement is not statistically significant for boys' PSE and that father's previous sports involvement is not statistically significantly related to girls' PSE. However, there is a statistically significant difference in PSPC ( $t(116) = -2.27, p = 0.002$ ) among girls, where girls whose mothers did not play sports have higher scores. Also, a statistically significant difference was obtained for PA ( $t(122) = 3.17, p = 0.03$ ) and PSPC ( $t(121) = 2.24, p = 0.03$ ) and father's previous involvement in sports, when it comes to boys; boys whose fathers played sports score higher on both dimensions. Results show parents have a role in the formation of physical self-efficacy during adolescence, but it is primarily expressed through belief in one's own physical abilities, and not so much in self-confidence when presenting one's physical self.

**Keywords:** young athletes, sport psychology, physical self-efficacy, parents' motivational climate, adolescence

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A LONGITUDINAL PERSPECTIVE ON THE RELATIONSHIP BETWEEN PARENTAL BEHAVIORS AND THE CHILD'S SUBJECTIVE WELL BEING (SWB)

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Research on parental behavior has found evidence that children who receive adequate parental care tend to have better personal outcomes. This study aimed to explore the role of parental behaviors in explaining a child's subjective well-being, measured one year later. The hypothesis is that parental behaviors will predict SWB measures, above and beyond SWB measures from the first research wave and sociodemographic factors (age and gender of the child). The research is part of the CHILD-WELL project, funded by the Croatian Science Foundation. Children assessed their well-being on the Student Life Satisfaction Scale (cognitive component of SWB) and PANAS-C (affective component of SWB). They also assessed their parents' behavior (URP), for mothers and fathers separately. The URP questionnaire has six subscales: warmth, autonomy, permissiveness, parental knowledge, punishment, and intrusion. All assessments are measured twice, with one year gap in between data collection. In total, 1379 children participated in the two research waves of this study. The participants' mean age is 11.52 ( $SD = 1.14$ ), and the sample is balanced by gender ( $M = 48.2\%$ ,  $F = 51.8\%$ ). Three separate hierarchical regression analyses were made, with three outcomes – SLSS, positive (PA), and negative affect (NA). In all three analyses, parental behavior was added after controlling for the outcome variable from the first research wave, age, and gender of the child. For SLSS, adding parental behavior increased the explained variance by only 2% ( $R^2 = 0.61$ ,  $\Delta R^2 = .02$ ,  $F_{(12, 891)} = 3.38$ ,  $p < .01$ ). Mother's punishment ( $\beta = -.07$ ,  $p < .05$ ), and father's warmth ( $\beta = .11$ ,  $p < .01$ ) were the only significant predictors of SLSS. With PA as the outcome, no independent significant predictors emerged. Repeating the procedure for NA, parental behavior increased the explained variance by 4% ( $R^2 = 0.30$ ,  $\Delta R^2 = .04$ ,  $F_{(12, 945)} = 4.48$ ,  $p < .01$ ), with the mother's permissiveness ( $\beta = -.07$ ,  $p < .05$ ) and father's punishment ( $\beta = .10$ ,  $p < .01$ ) as the only significant predictors of the child's NA. Gender and age were significant sociodemographic predictors in all three cases. Overall, older children have lower SLSS, less PA, and more NA. On the other hand, the male gender predicts higher SLSS, more PA, and less NA. The results of the study possibly indicate that other factors other than parental behavior play a role in the child's subjective well-being.

**Keywords:** subjective well-being, parental behavior, longitudinal data, middle childhood, children

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DEVELOPING SELF INSTEAD OF DEPRESSION: MEDIATING PATHS TO  
EMERGING ADULTS' MENTAL HEALTH

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Previous studies on emerging adults have shown that prolonged distress related to the perceived discrepancy between ideal and current self reflects less adaptive emotional regulation and might lead to elevated depressiveness. Moreover, confidence in their ability to mitigate this discrepancy is considered an important mediator. We wondered if differentiation of self (a measure of self's maturity, i.e., capability to distinguish between intellectual and emotional processes behind personal experiences) underlies this experience of discrepancy. Our research aimed to explore how self-differentiation could predict depressiveness if mediated through discrepancy distress, anxiety, and confidence to change. Participants were 364 emerging adults (18.7% male) aged 18-30 ( $M = 21.44$ ,  $SD = 2.36$ ). The level of self-differentiation (SD) was obtained via Differentiation of the Self Inventory (46 items, Likert 1-6), while depression (DEP) and anxiety (ANX) scores came from Depression Anxiety Stress Scale (42 items, Likert 0-3). Participants also completed the Self-Discrepancies Scale, estimating (Likert 1-7) how big they find the discrepancies between their ideal and current self, how much distress this causes (DIS) them, and how confident they feel to achieve the aforementioned ideal (CONF). We conducted the Hayes PROCESS analysis. The results showed that variables fit best model 81. Two simple and sequential mediations were confirmed: 1. SD – ANX – DEP ( $ab = -.07$ ,  $SE = .01$ ,  $CI [-.09, -.05]$ ); 2. SD – CONF – DEP ( $ef = -.01$ ,  $SE = .00$ ,  $CI [-.02, -.00]$ ); 3. SD – DIS – ANX – DEP ( $cgb = -.01$ ,  $SE = .00$ ,  $CI [-.02, -.00]$ ); 4. SD – DIS – CONF – DEP ( $chf = -.01$ ,  $SE = .00$ ,  $CI [-.02, -.01]$ ). The only insignificant effect was the one between distress and depression; the whole model explained more than half of depression variance ( $R^2 = 0.57$ ,  $p < .00$ ). These results show that better self-differentiation predicts lower levels of depressiveness (and vice versa) directly and through different mediation paths. Moreover, distress caused by the distance from the ideal self, also predicted by lower self-differentiation, seems to be a critical point that might lead to depressiveness through anxiety or crisis resolution through confidence in the ability to change. We might also consider therapeutic implications for addressing depressiveness in emerging adulthood, such as increasing the aforementioned confidence and acknowledging potential depressiveness underlying the observed anxiety.

**Keywords:** differentiation of self, depression, anxiety, ideal self, emerging adults

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TESTING THE PRINCIPLES OF THE CLASSIFICATIONS OF WRONG ANSWERS ON  
STANDARD PROGRESSIVE MATRICES

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The pattern of wrong answers made on Standard Progressive Matrices (SPM) provides additional information of people's intellectual abilities. The very last classification of wrong answers improved inter-rater reliability among coders. However, it is based on the same principles as all the previous ones: the right answer is considered to be a proof of person's matching ability to problem difficulty and the classification is based on the combination of analysis of the item structure and the similarities of wrong answers to the correct one. Human factors (reasoning processes and their development, understanding of the task) were omitted. The aim of this study was to test those principles. Children ( $N = 26$ ; 10 boys, 16 girls) solved the SPM three times, at the age of 7, 9 and 11. Last two times their verbal explanations for choosing certain answer are recorded and compared with descriptions of wrong answers. This paper presents the results of the analysis of the item D12 that contains 4 relations and on which children made wrong answers named wrong principle (WP) and incomplete correlate (IC). Children's explanations do not match the descriptions. Type WP (variants 1, 2, 4, 7) is too broad and cannot distinguish between children who didn't understand task at all (1), or those who detected one (2, 4) or two relations (7) in the matrix. Type IC (variants 5, 8), supposed to distinguish subjects with different levels of working memory ability, at the age of 9 and 11 seems to be distinguishing between children at different levels of development of thought (abstract (5) vs. conceptual (8) thinking). Variant 5 is chosen by those able to distinguish *line* as both an object and element of the objects, while variant 8 is chosen by those who saw lines only as *sticks*. Finally, explanations for choosing the right answer do not always show that the task is understood. They represent the type WP instead. Additionally, 2 of 3 children who chose the right answer at the age of 9 were not able to explain it *and* did not choose it at the age of 11. Comparison of choice distributions over the years also shows that the most common wrong answer, chosen at all ages was WP, but majority of 7 y/o chose variants 1, 2 or 4 ( $N = 16$ ) while majority of 9 and 11 y/o chose variant 7 ( $N = 10$ ,  $N = 9$ ). In spite of the existing research practice data collected from children aged 8-13 cannot be analyzed together. In order to be informative, future classification has to include the human factors.

**Keywords:** Standard Progressive Matrices, wrong answers, longitudinal method, development of thought, directed content analysis

*SOCIAL PSYCHOLOGY*

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POLITICAL DISTRUST AS A DETERMINANT OF ENDORSEMENT OF CONSPIRACY THEORIES: EVIDENCE FROM MULTIPLE INTERNATIONAL DATASETS

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Trust in the political system has been recognized as an important building block of well-functioning social systems. On the other hand, distrust in the political system can motivate individuals to find leadership and relevant information elsewhere. The lack of political trust can become a severe problem in crises as citizens may be unwilling to follow the recommendations of political leaders and rely on other sources of information. In other words, we hypothesized that distrust in politicians and the national parliament could represent a fertile ground for the development and spread of various conspiracy theories. We used three large-scale international data sets - European Social Survey rounds 9 ( $N = 49519$  from 29 European countries) and round 10 ( $N = 26094$  from 15 European countries available at the time when the manuscript was prepared), and ICSMP COVID-19 data ( $N = 51404$  participants from 69 countries around the world) - to evaluate the relationships between trust in politicians and parliament and the support for conspiracy theories. The analyses were carried out at the individual and country level. To avoid the issue of reverse causality in our country-level analyses, aggregated data on political trust from ESS round 9 was used to predict aggregated support for conspiracy theories on secret groups making relevant political choices, scientists deceiving the public, and COVID-19 being artificially developed, from ESS round 10 and conspiracy theories on COVID-19 from ICSMP COVID-19 data. Individual-level analyses were based on the data on trust in politicians and parliament and support for conspiracy theories from ESS round 10. Results robustly confirm our expectations: on the individual level and in each country, participants who reported less trust in politicians and national parliaments also reported more trust in all the conspiracy theories ( $r$  between  $-.38$  in Latvia and  $-.09$  in Portugal, all  $p < .01$ ). Moreover, trust in conspiracy theories on the national level was higher in countries with lower overall trust in politicians and national parliament ( $r$  between  $-.92$  and  $-.86$  in the data set consisting of ESS round 9 and ESS round 10 and  $r$  between  $-.77$  and  $-.63$  in the data set consisting of ESS 9 and ICSMP COVID-19, all  $p < .01$ ). These findings confirm the relevance of political (dis)trust in the development and spread of conspirational narratives and highlight the need to understand its individual and contextual determinants better.

**Keywords:** trust, parliament, politicians, conspiracy theories, conspiracy beliefs

A WORLDVIEW OF CONTRADICTIONS: HOW DOUBLETHINK RELATES TO  
SOCIAL CONSERVATISM, BLIND PATRIOTISM, INGROUP GLORIFICATION AND  
SOCIAL DISTANCE

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People tend to endorse mutually inconsistent beliefs at the same time - i.e. they argue for making voting obligatory for everyone, while simultaneously claiming that some people should not be allowed to vote. If they tend to do so, we say they are prone to doublethink. Particularly negative attitudes about outgroups are often riddled with such inconsistencies, insofar that any negative claims, even when they are inconsistent, are endorsed (e.g. refugees are lazy and only come for government handouts but are also taking all of our jobs; Jews are over-assimilative but also strategically refusing to assimilate). These negative attitudes towards outgroups are typically embedded in a socially conservative worldview - one that implies intolerance of other groups and glorification of our own. In this study we thus explored how doublethink is (1) related to blind patriotism, ingroup glorification and social conservatism and (2) social distance towards different outgroups. We also tested whether the relation between doublethink and social distance towards different groups is mediated by this proposed worldview, characterized by blind patriotism, ingroup glorification and social conservatism. Participants ( $N = 411$ ) filled out the Proneness to doublethink scale, the Blind patriotism scale, the Ingroup glorification subscale from the National Identification Scale, as well as measures of social distance towards Roma, gay people, refugees, Croats and Kosovo Albanians. Results show that, expectedly, doublethink was positively related to all worldview variables ( $r$  ranging from .346 to .395,  $ps < .001$ ), and that those prone to doublethink show a greater social distance to different outgroups ( $r$  ranging from .119 to .237,  $ps < .05$ ). Doublethink predicted social distance towards gay people both directly ( $estimate = 0.124$ ,  $p = .020$ ) and indirectly through social conservatism ( $estimate = 0.077$ ,  $p = .001$ ). In turn, the relation between doublethink and social distance was fully mediated, by ingroup glorification ( $estimate = 0.057$ ,  $p = .031$ ) and blind patriotism ( $estimate = 0.072$ ,  $p = .016$ ) in the case of Croats, and blind patriotism ( $estimate = 0.078$ ,  $p = .008$ ) and social conservatism ( $estimate = 0.052$ ,  $p = .021$ ) in the case of Kosovo Albanians. We found only a direct effect in the case of social distance towards Roma and refugees. We discuss how doublethink might be a key component to upholding a certain type of belief system, making it a candidate for targeting in interventions.

**Keywords:** doublethink, irrational beliefs, social distance, ideology, conservatism

PSYCHOLOGICAL ROOTS OF ETHNIC IDENTITY DELEGITIMIZATION

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Ethnic identity delegitimization (EIDL) is a tendency to deny the self-determination and recognition rights to ethnic groups on the basis of the length of their existence. It is conceptualized as a general tendency, i.e., as a belief unrelated to a particular group. This tendency, however, predicted attitude towards specific ethnic outgroups over and above its well-known predictors, such as ingroup identification, and political orientation. However, the antecedents of EIDL are still understudied. Since EIDL is a general belief about ethnic identity, it is reasonable to assume that it stems from trait-like ideological beliefs (e.g., Right-wing authoritarianism [RWA] and Social dominance orientation, [SDO]), as well as from meta-identity beliefs, e.g., psychological essentialism and perceived possibility to hold complex social identities. In this study, we recruited a total of 1370 participants from the Republic of Srpska (65% women), aged 18-35 ( $M = 18.6$ ,  $SD = 2.15$ ), as a part of a larger project. They completed short versions of the following scales, all measured 1-5: RWA ( $\alpha = .76$ ), SDO ( $\alpha = .57$ ), essentialism ( $\alpha = .70$ ), identity complexity ( $\alpha = .77$ ), as well as four items from EIDL scale that loaded on two relatively independent latent dimensions: delegitimization and legitimization. For this purpose, we analyzed only the delegitimization dimension. We tested a hierarchical linear regression model with EIDL as an outcome, ideological beliefs (RWA and SDO) as predictors in the first step, and beliefs about identity (essentialism and identity complexity) were in the second step. As expected, both ideological beliefs contributed positively and explained 11% of EIDL ( $F(2,1367) = 88.40$ ,  $p < .001$ ). Similarly, both meta identity beliefs contributed positively and added another 11% of the variance ( $F(2,1365) = 93.27$ ,  $p < .001$ ). All predictors significantly contributed to the model ( $ps < .001$ ). Our results show that the tendency to deny the existence of ethnic groups is rooted in more basic social beliefs about the origin of the group membership, identity boundaries, as well as about the power relations between the groups. Positioning EIDL in the nomological network of sociopsychological constructs helps us understand its nature and uniqueness.

**Keywords:** Ethnic identity delegitimization, Right-wing authoritarianism, Social dominance orientation, Essentialism, Identity complexity

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## LIVING IN A PERFECT COUNTRY: COLLECTIVE NARCISSISM, COGNITIVE REFLECTION AND CLOSED-MINDEDNESS IN CROATIA, SERBIA, HUNGARY, AND DENMARK

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Although relevant, collective narcissism, a form of group identification based on unrealistic beliefs about ingroup superiority and uniqueness, remains understudied (especially in local contexts) and often confused with patriotism. This study evaluated whether collective narcissists, just like narcissists, prefer to engage in intuitive thinking compared to cognitive reflection and reject different opinions. The first goal of this study was to evaluate whether the classes of collective narcissists existed in samples from Croatia ( $N = 515$ ), Serbia ( $N = 1070$ ), Hungary ( $N = 506$ ), and Denmark ( $N = 566$ , selected as a country from a different historical and cultural context) based on the pattern of responses on items measuring national identification and collective narcissism. The second goal was to evaluate the performance of the established classes on the cognitive reflection tasks (CRT) and compare their closed-mindedness scores. Data were collected within the ICSMP COVID-19 project. Regarding the first goal, the latent class analysis suggested the existence of three latent classes in samples from Croatia, Hungary, and Denmark and four in the sample from Serbia, probably due to the larger sample size. Furthermore, in data from Croatia, Hungary and Serbia, classes of collective narcissists (individuals scoring high on national identification and national narcissism items) were established. In the Danish sample, a similar pattern (but with lower scores on national narcissism items) was found. Across all countries, a significant difference between classes was found in CRT performance (Croatia:  $\chi^2(6) = 34.1, p < .001, Cramer V = .18$ ; Hungary:  $\chi^2(6) = 30.6, p < .001, Cramer V = .18$ ; Serbia: ( $\chi^2(9) = 22.1, p = .008, Cramer V = .11$ ; Denmark: ( $\chi^2(6) = 19.3, p = .003, Cramer V = .13$ ) and closed-mindedness (Croatia:  $F(2, 509) = 10.2, p < .001, \text{partial } \eta^2 = .04$ ; Hungary:  $F(2, 503) = 14.1, p < .001, \text{partial } \eta^2 = .05$ ; Serbia:  $F(3, 954) = 10.4, p < .001, \text{partial } \eta^2 = .03$ ; Denmark:  $F(2, 563) = 33.1, p < .001, \text{partial } \eta^2 = .11$ ). The highest proportion of participants responding incorrectly on all CRT items and the lowest proportion of participants responding correctly to all items (except in the Danish sample) was established among the collective narcissists. Collective narcissists also were the most closed-minded (except in the Danish sample). Overall, the study confirmed that collective narcissists, just as narcissists, prefer intuitive thinking and do not take interlocutors with different opinions seriously.

**Keywords:** collective narcissism, national narcissism, cognitive reflection, closed-mindedness, patriotism, group identification

DIFFERENCES BETWEEN PARENTS AND CHILDREN IN READINESS FOR RECONCILIATION AND NATIONALISM IN BOSNIA AND HERZEGOVINA

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The war in Bosnia and Herzegovina ended in 1995 and today people who participated in that conflict live there, as well as their children born during or after the war. The goal of our research is to determine the differences between parents and children when it comes to the willingness of young people in BiH to reconcile and the expression of nationalism. Reconciliation means letting go of anger, revenge, and resentment towards those who have wronged you, those you love, or groups you identify with. It also implies the willingness to accept the other into one's moral community so that he or she is treated fairly and with consideration. The research was conducted in the middle of 2019 on a sample of 1,308 young people in BiH aged 15 to 30 and 525 of their parents. One part of the surveys was done using the paper and pencil method, in order to switch to online answering due to the COVID-19 pandemic. Among the overall sample, we find 38.7% men and 57.8% women, while the average age of young people was 19, and their parents 46. We measured reconciliation with the scale of readiness for reconciliation, which was authored by Nebojša Petrović and consists of 40 items. Through factor analysis, we singled out three factors: rehumanization (the human life of any of us is no more valuable than the human life of a member of the other two nations), forgiveness (I can forgive the members of the other two nations who acknowledge the evil they have inflicted on me), and mistrust (other nations have always devised plans against our people throughout history). We measured nationalism with 16 items and factor analysis separated into three factors: globalism (humanity should set itself the goal of the complete abolition of nations), national pride (the feeling of attachment to one's own nation is one of the most beautiful feelings that an individual can have), and chauvinism (not should mix with members of other nations, through ethnically mixed marriages). Willingness to rehumanize opponents and cooperate with them is more pronounced in parents than in children  $t(1831) = -6.856, p = 0.000$ , and the same is true for the variable forgiveness  $t(1831) = -6.113, p = 0.000$ . When talking about mistrust of others and globalism, we do not find statistically significant differences between children and parents. National pride is more pronounced in children than in parents  $t(1831) = 6.793, p = 0.000$ , as well as chauvinism  $t(1831) = 2.720, p = 0.007$ . The obtained results show that direct participants in the war are more willing to forgive and cooperate with the opponents than their children, while young people who have not felt the horrors of war have more pronounced national pride and chauvinism.

**Keywords:** youth, parents, nationalism, readiness for reconciliation, Bosnia and Herzegovina

SHARED SOCIAL IDENTITY AFTER VIOLENT CONFLICTS: THE CASE OF BOSNIA  
AND HERZEGOVINA

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Identifying with a shared, superordinate identity has been shown to be, under certain conditions, an efficient strategy for improving intergroup relations and reducing intergroup conflict. After the 1990s war, the three ethno-religious groups (Serbs, Croats, Bosniaks) in Bosnia and Herzegovina (BiH) remained within the borders of a single country, while still suffering from (non-armed) conflicts. The superordinate national identity could have had the potential to reduce interethnic conflicts and improve intergroup relations; however, only one group (Bosniaks) identifies with the Bosnian-Herzegovinian identity. To understand different meanings attached to it, in our study we explored the conceptualizations of national identity in BiH by applying Q methodology. Q methodology is a combination of quantitative and qualitative approaches and is used to uncover socially shared viewpoints of complex issues. Fifty lay participants ( $M_{\text{age}}$  33 years, 58% females, 36% self-identified as Bosniaks, 24% as Serbs, 30% as Bosnian-Herzegovinian, 6% as Others) sorted 48 items representing different aspects of national identity according to how characteristic they are for being Bosnian-Herzegovinian. These items were selected based on qualitative studies as well as answers to an open-ended question in previous studies in BiH. Three viewpoints were identified representing different conceptualizations of national identity. The first viewpoint, “idealized national identity”, included only positive descriptions (e.g. “being tolerant of other religions and nations”) as typical for the Bosnian-Herzegovinian identity, while negative descriptions (e.g. “living bad”) were rejected. In the second viewpoint, descriptions of BiH as a “fake state”, “influenced by the foreign powers”, with “imposed national identity”, are salient. In the third viewpoint, central to Bosnian-Herzegovinian identity are formal characteristics (“being a citizen of BiH”, “living in BiH”), and patriotic elements (e.g. “being a patriot”) followed by accepting the imperfections of the country (e.g. although it is not perfect, we still need to love it”). The results will be discussed in the light of the self-categorization theory and ingroup projection model. We argue that different understandings of national identity in BiH have different implications for intergroup relations and consequently for the development of society.

**Keywords:** social recategorization, Q methodology, Bosnia and Herzegovina, national identity

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PERSONALITY TRAITS AND SPECIFIC ATTITUDES AS THE PREDICTORS OF  
CONFLICT MANAGEMENT STRATEGIES: A COMPARISON OF YOUNG PEOPLE IN  
ITALY AND SERBIA

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The aim of the paper is to explore the preferences in conflict management strategies and to test how basic personality traits and specific attitudes predict the use of those strategies in two cultural contexts. The study was based on the Dual Concern Model (Pruitt & Rubin, 1986), but conflict management strategies were reduced on three-factor solution: Cooperative, Competitive and Defensive. Personality traits were described by Six-factor model, measured by *The Mini IPIP-6* (Sibley et al., 2011), with the additional disposition for disintegration (Knezevic et al., 2017), measured by *The DELTA inventory*. It was expected that young adults from Serbia, as more collectivistic culture (Hofstede, 2011), will use more defensive strategies, while in Italy, as more individualistic culture, they will use more competitive strategies. Furthermore, according previous studies, it was expected that Agreeableness and Honesty-Humility would be a significant predictor of collaboration, Extraversion would predict competitive strategies, while Disintegration may be associated with defensive strategies. We also assumed that the “Competitive-jungle” worldview (Duckitt et al., 2002), predict both, competitive or defensive strategies, while gender equality attitudes will be associated with collaboration. The sample consists of 764 young adults in range from 18 to 30 age, from Serbia ( $N = 288$ ) and Italy ( $N = 476$ ). Serbian participants used more Cooperative ( $M_{dif} = 0.24$ ,  $t(762) = 4.18$ ,  $p < .001$ ,  $d = 0.31$ ) and Defensive strategies ( $M_{dif} = 0.30$ ,  $t(762) = 6.67$ ,  $p < .001$ ,  $d = 0.5$ ) the Italian ones, but there were no significant differences in using the Competitive strategy ( $M_{dif} = 0.00$ ,  $t(762) = 0.09$ ,  $p = .931$ ,  $d = 0.01$ ). Competitive strategies are typical of extrovert persons ( $\beta = .23$ ,  $p < .001$ ) with lower honesty ( $\beta = -.37$ ,  $p < .001$ ), those who experience the world as a competitive jungle ( $\beta = .24$ ,  $p < .001$ ), and those who have a positive attitude towards conflicts ( $\beta = .11$ ,  $p < .05$ ). Cooperative strategies used more agreeable young people ( $\beta = .27$ ,  $p < .001$ ) who are open to experience ( $\beta = .18$ ,  $p < .01$ ) and have a positive attitude towards gender equality ( $\beta = .17$ ,  $p < .01$ ), while Defensive strategies are preferred among the agreeable ones ( $\beta = .20$ ,  $p < .01$ ) who perceive the world as a “competitive jungle” ( $\beta = .24$ ,  $p < .001$ ). Different contribution of personality traits and attitudes to prediction of conflict strategies in two samples are discussed in terms of individualistic vs. collectivistic cultures.

**Keywords:** conflict resolution strategies, Six-factor personality model, disintegration, gender role attitudes, world view as a competitive jungle

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RELATIONSHIP BETWEEN PET ATTACHMENT AND WELLBEING: A MATTER OF  
REDUCED STRESS?

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The purpose of this study was to examine how attachment to pets relates to the psychological well-being of an individual. Previous research shows that relationship with pets has qualities of psychological attachment and can positively affect well-being: pets provide love and comfort to their owners, and they are perceived as support during difficult periods of life. We, therefore, expected that attachment to pets would be a significant predictor of psychological well-being. In addition, assuming that contact with pets can alleviate everyday stress, we tested whether a reduced experience of stress mediated this relationship. A survey was conducted among a community sample of pet owners ( $N=215$ ). The sample consisted of respondents aged 13 to 66 years, with an average age of 30 ( $M = 29.92$ ,  $SD = 10.70$ ; 81.4% women). Participants indicated their attachment to a favorite pet (using The Short Attachment to Pets Scale; SAPS,  $\alpha = .89$ ), subjective well-being (using The Pemberton Happiness Index,  $\alpha = .91$ ), and the current level of perceived stress (using The Serbian version of the Perceived Stress Scale,  $\alpha = .65$ ). The results revealed a positive relationship between pet attachment and well-being ( $r = .238$ ,  $p = .001$ ). However, the assumption that attachment to pets will reduce the experience of stress turned out to be unsupported. Conversely, participants who were more attached to their pets also expressed more experience of stress ( $r = .211$ ,  $p = .005$ ). Mediation analysis showed that the relationship between pet attachment and well-being was not mediated by the experience of stress ( $b = -0.01$ ,  $SE = 0.02$ , 95% CI [-0.05, 0.01]). One possible interpretation is that individuals more attached to their pets are generally more caring and emotional so they might be more sensitive to stressors. Another possible interpretation is that taking care of pets in itself causes stress. The relationship between caring for pets, stress, and well-being appears to be more complex and needs further study. Still, current findings can be a significant starting point for future research on the relationship between pet attachment and psychological well-being in the local cultural context.

**Keywords:** pet attachment, stress, well-being



INTERCULTURAL SENSITIVITY OF PRIMARY AND SECONDARY SCHOOL STUDENTS IN BELGRADE: GENDER AND AGE SPECIFICITIES

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Intercultural sensitivity of students is becoming an increasingly important topic for intercultural education and society. Intercultural sensitivity is defined as an individual's ability to develop a positive emotion towards understanding and appreciating cultural differences in order to promote appropriate and effective behavior in intercultural communication. In order to examine the level of intercultural sensitivity of students, a survey was conducted on a sample of 475 students (64.8% female), aged 13–19 years ( $M = 15.61$ ;  $SD = 1.49$ ), who attend primary (26.5% of students) and secondary schools in Belgrade. The instrument Intercultural Sensitivity Scale (ISS) was used to assess intercultural sensitivity. A short explanation was written to the students that there are a large number of cultures in the world that differ from each other in terms of customs, traditions and language, and that all people have the opportunity to interact with people from different culture. Students were asked to evaluate their own opinions and feelings in such situations. ISS is a five-point Likert-type scale, which consists of a total of 24 items, further divided into five subscales: Interaction engagement (e.g. “I enjoy interacting with people from different cultures”), Respect for cultural differences (e.g. “I respect the values of people from different cultures”), Interaction confidence (e.g. “I am pretty sure of myself in interacting with people from different cultures”), Interaction enjoyment (e.g. “I get upset easily when interacting with people from different cultures”) and Interaction attentiveness (measure social behaviors related to personal ability of attentiveness and perceptiveness in interactions; e.g. “I am sensitive to my culturally-distinct counterpart’s subtle meanings during our interaction”). The internal reliability of the scale was good ( $\alpha = .88$ ). The mean global ISS score was  $4 \pm .57$ . When the scores on the subscales are observed, the students record the highest score on the Respect for cultural diversity subscale ( $M = 4.30$ ;  $SD = .76$ ), and the lowest on the Interaction attentiveness subscale ( $M = 3.27$ ;  $SD = .95$ ). Female students are more interculturally sensitive than male students, both in terms of the total score ( $t(467) = -7.36$ ,  $p < 0.01$ ,  $d = .69$ ), and in the scores on all subscales. Also, it was established that the level of intercultural sensitivity of students increases with age ( $r = 0.2$ ,  $p < 0.01$ ), that is, secondary school students are more interculturally sensitive than elementary school students ( $t(474) = 3.83$ ,  $p < 0.01$ ,  $d = .44$ ), which can be explained by richer experience in diverse interactions at an older age. This trend is also observed on all subscales, except for the Interaction attentiveness subscale. The obtained results can serve as a basis for designing educational interventions or programs aimed at developing students' intercultural sensitivity. The above is particularly significant if we consider the importance of intercultural sensitivity for the student's life and active participation in a multicultural and intercultural society.

**Keywords:** intercultural sensitivity, students, cultural differences

UNDERSTANDING RESISTANCE AGAINST GENDER FAIR LANGUAGE: A SYSTEM JUSTIFICATION PERSPECTIVE

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Recent legislative efforts to introduce obligatory use of the gender fair language (GFL) in research, education and media in Serbia received considerable resistance from the public. In line with System justification theory (SJT), we hypothesize that GFL is perceived as an intergroup status threat, which activates motivated defensive mechanism that rationalizes the legitimacy of gender relations status quo and justifies linguistic gender discrimination. Because the recognition of an unprivileged status within the system can be threatening to self-esteem, within the SJT framework members of underprivileged groups can also be motivated to engage in system justification. In an online sample of 449 participants (55% female) we applied a 29 item scale measuring the acceptance of various critical arguments against the GFL and a scale measuring the frequency of GFL use (ranging from Never to Always). The arguments against GFL were identified within the previous studies, public narrative around the GFL in Serbia and within the qualitative pilot study in a student sample ( $N = 80$ ). EFA revealed that critical arguments against GFL can be described by three latent variables: 1) perceiving GFL as a threat to national identity, Serbian language and men, 2) defending linguistic status quo and rejecting the effectiveness of GFL, 3) rejection of the GFL due to linguistic barriers and habits. All three factors independently negatively predict the use of GFL: threat perceptions account for 48% of the variance in use, defending linguistic status quo accounts for 7% variance, while language barriers and habits explain 4%. Through moderated mediational analyses we tested whether the rejection of GFL use among men and women can be predicted by perceiving GFL as a threat and mediated through status quo arguments. Previously described factors were used as the predictor and the mediator in the analyses. The negative effect of threat perception on GFL use was mediated through status quo arguments, and the mediation effect was stronger among women (Direct effect:  $B = -.47, p < .01, CI: -.62$  to  $-.33$ ; Indirect effect in men:  $B = -.31, p < .01, CI: -.41$  to  $-.22$ ; Indirect effect in women:  $B = -.43, p < .01, CI: -.56$  to  $-.30$ ). While threat perceptions are higher in men, women rationalize their rejection of GFL significantly more by defending the linguistic status quo. Different forms of resistance to GFL can be traced back to intergroup threat perception and mapped onto system justification beliefs.

**Keywords:** Gender fair language, system justification theory, intergroup threat, gender relations

HOW SOCIAL EVALUATIONS SHAPE TRUST IN 45 TYPES OF SCIENTISTS

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Science can offer solutions to a wide range of societal problems. Key to capitalizing on such solutions is the public's trust and willingness to grant influence to scientists in shaping policy. Previous research on determinants of trust in scientists is limited and does not factor in the diversity of scientific occupations. In the present study, we investigated how four widely-established dimensions of social evaluations (competence, assertiveness, morality, warmth) predict trust in 45 types of scientists, and consequential willingness to grant scientists influence in managing societal problems. We recruited 2780 participants (1333 men, 1382 women, 65 indicated "other";  $M_{age} = 39.03$ ) from Prolific who rated four (randomly selected out of 45 in total) scientific occupations on several dimensions. These included the four social dimensions of competence, assertiveness, morality, warmth (each measured with five items on a seven-point bipolar scale), trust, and the specifically developed influence-granting task (IGT). The IGT presented participants with a pressing complex problem, and asked them to rate how much decision power they would allocate to different parties (e.g., citizens, friends), with one party always including a scientific occupation. We found that trust in most scientists was relatively high (scores above mean for all occupations), varying more across participants than across occupations ( $LRT(1) = 21.8, p < .001$ ). Perceptions of morality ( $\beta = .44, t(1050) = 45.34, p < .001$ ) and competence ( $\beta = .19, t(1086) = 20.53, p < .001$ ) emerged as the most important antecedents of trust, which in turn predicted the willingness to grant scientists influence in managing societal problems ( $\beta = .23, t(1012) = 23.31, p < .001$ ). Interestingly, the importance of morality ( $LRT(5) = 69.43, p < .001$ ), but not competence ( $LRT(5) = 9.16, p = .103$ ), in shaping trust levels varied across occupations: morality was most strongly associated with trust in scientists that work on contentious and polarized issues (e.g., climatologists). Our study is thus important not only for understanding which factors shape trust in scientists, but also for understanding what makes people desire scientists' input in policymaking. Future research should investigate the generalizability and causal directions of our findings.

**Keywords:** trust in scientists, trust, social evaluations, science attitudes, science policy

CONSERVATIVE-LIBERAL MINDSET AS A DRIVER OF COVID-19 VACCINATION  
BEHAVIOR

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Despite evidence showing that beliefs and values associated with conservative ideology are important predictors of vaccination against COVID-19, none of the previous studies examined if they contribute to specific vaccination choices and preferences in the context of different COVID-19 vaccines available. The present study examines the role of conservatism-liberalism, conceptualized as a relatively stable mindset in predicting the broad spectrum of COVID-19 vaccine-related behaviors above and beyond sociodemographics – vaccination status and specific vaccine choices and preferences. The study was conducted on a sample representative of the Serbian population ( $N = 1000$ ), whose citizens could freely choose which COVID-19 vaccine they wanted to receive. The first principal component extracted from self-placement on the social axis of political orientation (1–extremely left-wing; 7–extremely right-wing), religiosity (1–not religious at all, 5–very religious), and Openness subscale of the BHI (4 items) was used as the measure of conservatism-liberalism. Participants reported the number of doses and specific COVID-19 vaccines they received for each dose, as well as reasons for their choice. Unvaccinated individuals reported which vaccine against COVID-19 they would receive in case of mandatory vaccination or if they eventually decided to get vaccinated. A series of hierarchical binary logistic regressions showed that conservatism-liberalism negatively predicts vaccination status ( $B = -.369, p < .01$ ) and significantly differentiates between vaccine-hesitant, single/two-times vaccinated, and booster-dose vaccine recipients, with the latter being more liberal than both former groups ( $p$ -values  $< .05$ ). Moreover, conservative individuals proved to be more likely to receive the Sinopharm ( $B = .282, p < .05$ ) – a traditional whole-virus vaccine, while liberal individuals were more likely to receive one of the innovative western vaccine options – Pfizer/BioNTech ( $B = -.213, p < .05$ ) or Oxford/AstraZeneca ( $B = -.684, p < .01$ ). Sputnik V proved to be the only vaccination option unrelated to conservatism-liberalism. Conservatism remained a remarkably stable predictor of booster-dose vaccine selections, despite vaccine shifts after the first two doses (Sinopharm  $B = .304, p < .05$ ; Pfizer/BioNTech  $B = -.331, p < .05$ ). The same pattern of results was observed for relations between conservatism-liberalism and vaccine preferences in a subsample of unvaccinated individuals (Sinopharm  $B = .448, p < .01$ ; Pfizer/BioNTech  $B = -.345, p < .05$ ). The results suggest that basic ideological beliefs impact people’s health-related choices and readiness to adopt targeted health-related behavior.

**Keywords:** COVID-19 vaccination, conservatism-liberalism, vaccine hesitancy, vaccine type selection

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## INTERNET TIME, OFFLINE AND ONLINE FRIENDSHIPS OF HIGH SCHOOL AND UNIVERSITY STUDENTS

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The past decades have witnessed a dramatic increase in the number of young people using the Internet, especially for communicating with peers. However, classical social theories point out that face-to-face physical contact is crucial for human connection (Wong, 2020). This research aims to investigate the amount of time that high school and university students spend on the Internet, number of online and offline friends, anxiety and avoidance in online and offline friendships. The research has been conducted using a non-random, convenient online sample. The questionnaire was filled out by 303 respondents, aged between 15 and 30 ( $M = 19,53$ ;  $SD = 3,50$ ), high school students (51%) and university students (49%). For self-assessment of the quality of relationships with friends, the respondents were given Scale of Experiences in Close Relationships – ECR-R (Fraley, Heffernan, Vicary, & Brumbaugh, 2011). Two dimensions were being assessed: *anxiety* (level of insecurity connected to someone’s accessibility and empathy) and *avoidance* (level of discomfort connected to closeness or dependence on someone). The results show that almost 60% of high school students and 44% of university students spend *five* hours daily or more in front of the screen, while 23% of high school students and 15% of university students spend *seven* hours daily or more on the Internet. Half of respondents has up to 5 offline friends, most of them (80%) have up to 10 friends, while 4% of respondents have only one or no offline friends. On the other hand, a quarter of respondents have no online friends, while half of them have 2 or fewer friends, and the majority (about 80%) have 5 or fewer online friends. Paired sample T-test revealed a statistically significant difference between avoidance in relationships with online and offline friends ( $t(221) = -8.891$ ,  $p = .000$ ). There is a statistically significant positive correlation between anxiety in relationships with offline and online friends ( $r = .643$ ,  $p = .000$ ). Differences between high school and university students were found only on anxiety in relationships with offline friends ( $t(301) = 2.371$ ,  $p = .018$ ). To conclude, young people more frequently confide to their offline friends, they more commonly share their worries and problems in person than in online contact. Despite the intensive use of the Internet, traditional form of relationship with friends “face-to-face” is dominant among the “digital natives”.

**Keywords:** Internet time, anxiety and avoidance with offline and online friends, high school and university students

PSYCHOLOGICAL REACTANCE IN MANDATORY VACCINATION POLICIES

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During the COVID-19 pandemic, vaccination rates have been behind in many countries despite being widely accessible. One potential solution to overcome vaccine hesitancy is introducing vaccination mandates. However, research showed that restricting individuals' freedom of choice in vaccination decisions can induce psychological reactance, potentially decreasing vaccination readiness for other vaccines (e.g., Sprengholz et al., 2021, 2022). This research also indicates that there is substantial variance in people's level of psychological reactance, but little is known what determines its variation. Therefore, we investigated whether different decision-making procedures to implement vaccination mandates, and people's ex ante preference for such procedures can potentially account for some of the variance in experienced reactance. That is, decisions for mandatory vaccination can be implemented through an indirect democratic decision based on the national assembly or a direct democratic decision on a referendum. After stating their ex ante preference for each of the procedures (within subjects), participants were assigned to one of these procedures (between subjects), where they were asked to imagine a scenario in which a vaccination mandate would be introduced through a majority vote of the parliament vs. a majority vote of the people on a referendum. After reading the vignettes, they completed a 4 items reactance questionnaire. This exploratory study was conducted in the context of the COVID-19 pandemic, with  $N = 1,642$  German participants (424 unvaccinated and 1218 vaccinated at the time of the study) recruited to participate in an online experiment in December 2022. Results showed no effect of the experimental manipulation ( $b = -0.6723$ ,  $CI = [-1.62, 0.28]$ ). Unvaccinated participants showed significantly more psychological reactance ( $M = 25.76$ ,  $SD = 4.94$ ) compared to vaccinated participants ( $M = 11.56$ ,  $SD = 8.34$ ,  $t(1251.5) = 41.92$ ,  $p < .001$ ,  $d = 1.87$ ). Additionally, the interaction of vaccination status and ex ante preference was significant ( $\beta = 0.12$ ,  $b = 2.37$ ,  $CI = [0.07, 4.67]$ ). Vaccinated participants, who preferred an indirect democratic decision showed lower reactance compared to vaccinated participants preferring the direct democratic decision. Unvaccinated participants, in contrast, showed high levels of reactance irrespective of their ex ante preference. We discuss the implications of the results for policymaking aiming to reduce psychological reactance.

**Keywords:** decision-making, psychological reactance, COVID-19, mandatory vaccination, policymaking

THE ROLE OF SOCIAL SUPPORT AND PERSONAL SUCCESS SATISFACTION IN  
THE RELATIONSHIP BETWEEN PERCEIVED STRESS AND LIFE SATISFACTION  
AMONG ATHLETES

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Considering sport only as a source of positive experiences obscures its complex and contextual nature. Previous research clearly shows that athletes are exposed to significant stress. In this research, we started from the assumption that exposure to stress is a risk for an athlete's life satisfaction, so the research question was whether it is possible to single out certain protective factors that can reduce the effect of stress on the athlete's satisfaction. The aim of the research was to verify the moderating role of the social network quality and social support (by coaches, teammates and parents) and personal success satisfaction in the relationship between perceived stress and life satisfaction. The criterion variable in this research was life satisfaction in athletes measured by Satisfaction With Life Scale, and the predictor variable was perceived stress measured by Perceived Stress Scale. Moderator variables were personal success satisfaction assessed by a single-item question rated on an 5 point Likert-type scale, and support (from coaches, teammates and parents) measured by Network of Relationships Inventory. The sample consisted of 143 respondents (female 65%; mean age 23.2,  $SD = 6.76$ ) with an age range between 13 and 47 years. All respondents were professional athletes involved in diverse sports (e.g., swimming, track and field, handball, basketball, tennis, table tennis). There were 103 athletes from team sports and 40 athletes from individual sports. 4 separate hierarchical regression analyses were conducted. In first blocks we entered predictor and moderator variables, and in second blocks their interactions. All variables have been centered prior to creating product terms. Perceived stress had a significant main effect in all blocks ( $\beta$  ranging from  $-.321$  to  $-.283$ ,  $p < .01$ ) while the social relations quality and support from coaches, teammates and parents did not prove to be significant ( $\beta$  ranging from  $.114$  to  $.165$ ,  $p \geq .05$ ). Personal success satisfaction had a significant main effect on life satisfaction in both blocks ( $\beta = .211$ ,  $\beta = .208$ ,  $p < .01$ ). The results showed significant correlations among the examined constructs, but no significant moderation was found ( $\beta$  ranging from  $.012$  to  $.087$ ,  $p \geq .05$ ). The obtained findings indicate that the relationship between the investigated constructs is complex and requires additional research. It is advised for future researches to make the sample larger and more uniform by age, sex or by the type of sport.

**Keywords:** perceived stress, life satisfaction, social support, athletes, satisfaction with personal success

Acknowledgment: The research was done in cooperation with the provincial Institute for Sports and Sports Medicine.

HISTORICAL THINKING AMONG SERBIAN HIGH SCHOOLERS: EXPECTATIONS  
VS REALITY

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In post-conflict societies of former Yugoslavia, opposing, one-sided historical narratives are often fostered by the groups involved, further deepening the divisions. For improving intergroup relations it is important to take into account critical thinking and multiperspective competencies group members display when dealing with those conflicting narratives. The education system plays an important role in developing those competencies. However, past research in the region showed that history textbooks contribute more to propagating one-sided narratives than developing multiperspective competencies and critical thinking, which are emphasized in highest-order educational regulations. The first aim of the present study was to compare the actual historical thinking competencies of Serbian high schoolers with expectations based on the official educational standards for history after finishing elementary school. The expected educational outcomes include different levels of historical thinking skills essential for interpreting and using historical sources. Based on the sample items from the standards, we constructed the Historical Thinking Test. The second aim was to explore correlations of historical thinking with defensiveness towards official in-group historical narrative (i.e. FENCE scale) and academic achievement in history (i.e. GPA in the last four years of elementary school). The sample consisted of 254 first year high school students of Serbian nationality from different regions and school types. A binominal test revealed that for the majority of items students achieved expected percentages based on educational standards or even exceeded them. Furthermore, results showed an absence of correlation between the historical thinking test and FENCE scale ( $r(252) = .042, p = .501$ ), but a low to moderate correlation with an average grade in history ( $r(231) = .298, p = .000$ ). Thus, our results indicate that high schoolers in Serbia possess more complex historical thinking competencies, but they are poorly explained by their academic achievement or socio-political attitudes. We discuss implications for educational practice and young people's development.

**Keywords:** historical thinking, educational standards, youth, multiperspectivity



## A CROSS-LAGGED MODEL OF PARENTS' SOCIAL SUPPORT AND SUBJECTIVE WELL-BEING

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People who perceive higher levels of social support from their close ones, also report higher levels of subjective well-being. However, it is not entirely clear whether this relationship is unidirectional or bidirectional. Social support may predict changes in subjective well-being, but higher well-being may also contribute to a higher capacity for obtaining higher levels of social support. The goal of this study was to assess these links among parents of children who are transitioning to adolescence. Parents may be benefiting from good social resources at a time when conflicts with their children may be arising. The study was conducted as part of the project Child well-being in the context of family (CHILD-WELL) which is financed by the Croatian Science Foundation. Data was collected at two-time points over a 1-year from 723 pairs of mothers and fathers who live together. Parents assessed their subjective well-being with the Personal Well-being Index and support from family and friends with The Multidimensional Scale of Perceived Social Support. Reciprocal links were examined with two autoregressive cross-lagged panel models. Models had good data fit for mothers ( $\chi^2(325) = 695.151, p < .01, CFI = 0.970, RMSEA = 0.046, SRMR = 0.050$ ) and fathers ( $\chi^2(325) = 561.287, p < .01, CFI = 0.979, RMSEA = 0.037, SRMR = 0.036$ ). Autoregressive paths were significant, and overall explained variance for mothers ranged between 41% for family support, and 55% for subjective well-being, and for fathers, it ranged between 40% for friends support and 43% for subjective well-being. For mothers, higher perceived support from friends at the first time point predicted higher subjective well-being a year later ( $\beta = 0.152, p < .01$ ), and vice versa, subjective well-being from the first time-point predicted higher perceived friends support ( $\beta = 0.141, p < .01$ ). Family support didn't have any significant cross-lagged effect in the model for mothers. The opposite pattern was shown for fathers. Family support ( $\beta = 0.125, p < .05$ ) and subjective well-being ( $\beta = 0.126, p < .01$ ) from the first time point had significant bidirectional links across time, while perceived support from friends didn't show significant associations with other constructs across time. These results show that there are cross-lagged links between perceived social support and mothers' and fathers' subjective well-being across a period of one year. However, mothers and fathers may benefit from different sources of social support.

**Keywords:** subjective well-being, social support, parents, longitudinal models

Acknowledgment: Project CHILD-WELL (HRZZ-IP-2019-04-6198) is financed by the Croatian Science Foundation.

WHAT IS IT LIKE TO HANG OUT WITH A REFUGEE? THE CONTENT OF HOST-SOCIETY CHILDREN'S IMAGINED CONTACT WITH REFUGEE CHILDREN

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Existing research suggests that imagined contact interventions could be useful in the preparation of host-society children for intergroup contact with refugee children. Even though the success of this intervention depends on the quality of contact, little is known of the content of these imagined interactions, especially when it comes to children. Therefore, the aim of this study was to explore the content of host-society children's descriptions and drawings created during an imagined contact intervention, and to assess the frequency with which detected topics occur. We have conducted a four-sessions long intervention in 28 elementary school classes in Croatia, with 478 pupils aged from ten to fourteen. During the first, second and fourth session children have written short descriptions of their meeting with a refugee child ( $N = 1251$  descriptions), and in the third session they have drawn a picture of an imagined encounter ( $N = 412$  drawings). All of the children's outputs were coded by two independent coders using pre-determined categories, and disagreements were resolved by a third coder. Outputs were coded for the occurrence of intentions for future contact, success and modes of communication used, as well as for the occurrence and kinds of prosocial behaviours towards imagined refugee children. The small number of children who did not follow the instructions were excluded from the further analysis. The results indicate that virtually none of the children describe unsuccessful communication with an imagined refugee child across sessions. Their communication modes mainly included using a common foreign language, such as English or German, but also Croatian, nonverbal and technology-mediated communication or learning the language of a refugee child. Across sessions, having intentions for future contact with an imagined refugee child was brought up more often than prosocial acts. However, percentage of children mentioning these topics varied between sessions. Prosocial behaviours included helping refugee child with the language, completing school assignments and making friends, as well as giving gifts and showing them around the school. In conclusion, this study suggests that children can imagine successfully communicating with refugee children, and that their imagined interactions often include plans for future contact and prosocial behaviour. The results could help to shed a light on host-society children's expectations from their interactions with refugees.

**Keywords:** Imagined contact, refugee children, intergroup communication, prosocial behaviour

COMING OUT, ACCEPTANCE AND LIFE SATISFACTION AMONG LGBT PEOPLE  
IN CROATIA

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Coming out is a continuous and extremely important process for lesbian, gay, bisexual and transgender people (LGBT) accompanied by positive consequences (self-acceptance, reducing stress due to hiding, increasing contact with other LGBT people) as well as significant risks (discrimination, threats, violence). Social context can influence anticipated reactions and shape different coming out milestones for different age cohorts. In the last ten years, the rights and visibility of LGBT people in Croatia improved but at the same time conservative movements and attacks on human rights were on the rise as well. According to the minority stress model, the restriction of rights and negative attitudes in society can significantly impair the quality of life for LGBT people. The aim of this study was to explore the coming out process and relation of the life satisfaction with the openness about LGBT identity, the perception of deprived life opportunities and the satisfaction with the acceptance in different life contexts. In total 479 LGBT people aged 15 to 54 ( $M = 28.41$ ;  $SD = 7.70$ ) participated in an online study distributed via chain-referral. Depending on sexual orientation, gender and sexual identity, the participants were divided in subgroups: cis-lesbian women (163; 34%), cis-gay men (152; 32%), cis-gender bisexual (106; 22%) and trans and gender variant (TIRV, 58; 12%). Participants became aware of their LGBT identity when they were 15 years old ( $M = 15.27$ ;  $SD = 5.20$ ) and in 4 years ( $M = 4.06$ ;  $SD = 4.58$ ), they shared this information for the first time. ANOVA results showed that the older generations became aware of their identity significantly later ( $F(3, 465) = 11.63$ ;  $p < .001$ ;  $\eta^2 = .07$ ) and it took them longer to share that information compared to younger generations ( $F(3, 456) = 8.36$ ;  $p < .001$ ;  $\eta^2 = .52$ ). Participants were generally dissatisfied with the acceptance of LGBT people in different life contexts and felt that their life opportunities were limited, but they were generally satisfied with their lives ( $M = 6.76$ ;  $SD = 1.86$ ). Life satisfaction was associated with greater openness about LGBT identity ( $r = .21$ ,  $p < .001$ ), more frequent coming out ( $r = .21$ ,  $p < .001$ ), and greater satisfaction with LGBT acceptance in different life contexts ( $r$  ranging from .11 to .19). Our results indicate that LGBTIQ people in Croatia rather successfully adjust to social changes by carefully choosing contexts for coming out in order to preserve their life satisfaction.

**Keywords:** LGBT, coming out, acceptance, life satisfaction

IF THEY WANT ME TO, I WILL: THE ROLE OF NORMS IN PREDICTING  
ATTITUDES TOWARDS REFUGEE PEERS

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School plays a key role in the social integration of refugee children. It offers an environment where children adopt norms about social relations by observing others. Besides parents, teachers and peers become significant others in children's lives during school age. Moreover, children develop their moral compass in deciding what is good and bad. Therefore, the study aimed to examine the role of the personal norm and perceived teachers', peers and parental norms on three types of attitudes towards refugee children in the context of limited opportunity for intergroup contact. In autumn 2021, a questionnaire was administered in 17 Croatian schools. In total, 761 host-community children from 2nd to 8th grade who attended classes with refugee children participated in the study. Children were asked to indicate how wrong it is if their peers exclude a refugee child from social situations (i.e. hanging out after school, birthday party and group on social media). Children's reasoning about moral exclusion was a proxy of personal norm about relations with refugee peers. Perceived social norms were assessed with three separate subscales about teachers', peers' and parents' support of contact with refugee children (i.e. help, make friends and hanging out with refugees). The results of three hierarchical regression analyses showed that when controlling for age and gender in the first step and adding norms in the second step, the models of general attitude ( $F(6,705) = 37.556, p < 0,001, R^2 = 0.242$ ), social acceptance ( $F(6,701) = 58.770, p < 0,001, R^2 = 0.335$ ) and contact intentions ( $F(6,715) = 76,950, p < 0,001, R^2 = 0.392$ ) were significant. Even though perceived social norms correlate moderately to highly, their relative importance differed between the three outcomes. Thus, peer and personal norms significantly predicted all three types of attitudes, while teachers' norms predicted general evaluation and social acceptance of refugee peers but not contact intentions. Parental norms were significant predictors only for contact intention. Regarding the sociodemographic variables, age was a relevant predictor for general attitude and, together with gender, significantly predicted social acceptance. We will discuss the importance of social and personal norms in building the majority's positive intergroup relations with refugee children to facilitate their social integration.

**Keywords:** norms, attitudes, intergroup contact, refugee children

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THE INFLUENCE OF THE JUDGMENT OF SUPPOSED SCIENTIFIC AUTHORITY IN  
THE DOMAIN OF RECOGNITION THE ORDER OF COLORS

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Considering there is no research examining the level of conformity with a scientific authority, who represents the group of people experienced in a certain field, the problem of this research is to examine informational social influence with the judgment of a supposed authority in science, in a situation of recognizing the order of colors. Also, this study examines the differences in accurate recognition of the standard stimulus between the two measures: in the first measure there is no answer from artist, and in the second, there is. The research sample is convenient and consists of 50 subjects from the general population who are distributed equally by gender and whose age range is from 18 to 65 years ( $AS = 41.5$ ,  $SD = 15.8$ ). The stimuli that were used was constructed for this study and it was presented to the subjects in the form of pictures in which a certain order of colors is displayed. In the first phase, the subjects were shown a standard stimuli lasting 1 second, and their task was to remember it and then recognize it among the four offered examples that were exposed for 3 seconds. The second phase was identical to the first, and the only difference was the presence of a response from an artist. The results of the research show that 23% of the cases were a manifestation of conformity. The analysis of the subject's responses to the variable "accuracy of recognition" shows that there is a statistically significant difference in terms of the average accuracy of recognition of the order of colors in the situation with and without the artist's response,  $t(49) = 4.59$ ,  $p = 0.001$ ,  $d = 0.649$ . A positive t-test value shows that recognition accuracy is higher in the situation without the artist's response. The t-test for dependent samples was applied within each situation individually, and the obtained results show that in four situations out of six in total, there is a statistically significant difference in terms of the average accuracy of recognition of the order of colors in the situation with and without the artist's response. Recognition accuracy is higher in a situation without an artist's response. The advantage of this research is the introduction of the variable of accurate recognition into the field of conformity studies, while some of the potential limitations are related to the use of the responses of scientific authority as majority that exerts influence as well as the external validity of the results.

**Keywords:** informational social influence, scientific authority, recognition the order of colors, accurate recognition

*EDUCATIONAL PSYCHOLOGY*

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SAME SITUATION SEEN DIFFERENTLY: COVID-19 AND TEACHING/LEARNING  
AT AGRICULTURAL FACULTIES IN CROATIA, NORTH MACEDONIA, BULGARIA  
AND SERBIA

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For teaching/learning in applied sciences, Covid-19 has been a particular challenge, since a significant part of studies is based on practice and field work. The aim of this study is to compare attitudes of teachers and students from different HE institutions about online classes. In spring 2022 the online survey has been conducted by 123 teachers and 362 students from agriculture faculties in Belgrade (Serbia-UB), Osijek (Croatia-UNIOS), Stara Zagora (Bulgaria-TrU) and Skopje (North Macedonia-UKIM). Results indicate that teachers became more positive toward online classes than 2 years ago and think of that as the biggest pedagogical (54%) and social (52%) challenge. At the same time, students believe that online learning did not contribute to their: learning outcomes (43%), learning efficiency (50%), communication and cooperation (52%) and the regularity of class attendance (48%). They also believe that their motivation for learning decreased (48%). Teachers from all HEIs emphasized the weaker ability to control students' independence in the examination situation as the most important problem of online assessment. Although the majority of teachers from all HEIs think that students' achievements remain the same, the second frequent answer is different: the UB (42%) and the UNIOS (34%) teachers find that the achievement of students is weaker (it is congruent with the findings of other researches), while teachers from the TrU (38, 8%) think that students' success has been improved. The majority of students of UNIOS assessed that their teachers are moderately motivated for online teaching (52.6%). Conversely, UB (39%) and NM students (48%) rated their teachers as unmotivated for online teaching. Teachers and students have different judgment about emotional correlates of online learning: among other aspects, students find that online learning is connected to loneliness (46%) and depression (32%). The majority of teachers (80%) disagree that online teaching is a potential risk on students' loneliness and depression. Despite the specificity of the educational context at different universities, students' perception of online teaching/learning is more similar than teachers, and is generally somewhat more critical. The findings also point to one typical problem in HE - teachers need to recognize and respect the student's perspective, regardless of the medium in which it is realized.

**Keywords:** Online teaching/learning, Covid-19, Higher education, Students' perception on teaching/learning, Teachers' perception on teaching /learning

INDIVIDUAL AND CONTEXTUAL FACTORS CONTRIBUTING TO STUDENT'S  
LEARNING PROGRESSION DURING DISTANCE LEARNING

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During the COVID-19 pandemic, students and teachers worldwide faced unprecedented and swift moves towards distance learning with little or no preparation. Consequently, some studies report decreases in academic performance, especially for younger students and those with worse socioeconomic backgrounds. Few studies, however, have focused on primary school students or explored the context of home learning more broadly, for example, by going beyond crude measures of SES that might not capture the actual disparities between students (e.g., a well-off family might still lack appropriate space or electronic devices, home-working parents might be less able to extend learning support). While digital access is generally high in Slovenia, the education-related restrictions were comparably strict and long-lasting, with little empirical insight into their possible detrimental effects for students. Using a nationally representative sample of eight-graders ( $N = 2552$ ,  $M_{age} = 13.79$ ,  $SD = 0.38$ , 51.4% male) from the Response to Educational Disruption Survey (REDS) conducted by UNESCO and the IEA in 2020 and 2021, we explored how economic, structural, and digital divides reflected in student self-assessed learning progression. We tested a series of linear regression models with four groups of predictors of learning progression: students' characteristics (digital literacy, preference for distance learning), access to digital tools, domestic situation (e.g., having a quiet space to learn, having to care for siblings), and received support to learning (by teachers, parents, and other people). Each group of variables significantly improved the prediction (final model:  $F(11, 2073) = 24.72$ ,  $p < .001$ ), with digital literacy as the strongest predictor of higher ( $\beta = .17$ ,  $p < .001$ ), and lack of teachers' support ( $\beta = -.10$ ,  $p < .001$ ) and unfavourable home conditions ( $\beta = -.21$ ,  $p < .001$ ) as the strongest predictors of lower learning progression. The share of variance, explained by the final model, however, was modest ( $R^2 = .12$ ), which might be attributed to self-report bias or the difficulty of assessing one's own progress. Still, the results support our expectations that indicators of various divides might affect not only student achievement but also their perceptions and well-being. Besides contrasting our findings with more objective measures of learning outcomes, future studies would also benefit from exploring the possible interactions between the factors under investigation.

**Keywords:** distance learning, learning progression, contextual factors, digital divide, primary school students



PATTERNS OF VULNERABILITY: PARENTAL PERSPECTIVE ON PROTECTIVE  
AND RISK FAMILY FACTORS DURING EMERGENCY REMOTE EDUCATION

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The beginning of the COVID-19 pandemic brought forth sudden changes in different aspects of education, whose immediate collateral were new roles and rules for all protagonists in the process, as well as the change in the division of their responsibilities. The back-and-forth transitions from one modality of teaching to another posed specific demands on both schools and families. New demands enforced on families often exceeded available family resources. As a consequence, a significant number of families were struggling to appropriately support their children's education. This study sought to unveil family-level protective and risk factors in the education of children from vulnerable groups during the pandemic. Parents of primary and secondary school children from vulnerable groups ( $N = 29$ ) took part in data collection from February to May 2022. Parents' retrospective accounts of children's educational experiences during the pandemic were invited through semi-structured interviews. Using the inductive qualitative content analysis, we have identified three major categories of family-level factors that were described as important for education of children from vulnerable groups during the pandemic. The first category outlined parental beliefs and competencies relevant to the children's education, and included parental self-efficacy, skills and knowledge, and child-related expectations. The second category was pertinent to time and energy for parental involvement in children's education by encompassing parental working arrangements, division of responsibilities within the family, and out-of-family support. The last group was labeled family culture and it comprised emotional climate, family cohesion, and living conditions. Depending on the family system, these factors were considered either as constraints or as resources for children's education during the pandemic. Study findings show that co-occurrence of different resources, such as adequate living conditions, high family cohesion, division of responsibilities within the family, positive emotional climate, and parental working arrangements, were quite similar in families that could be described as resilient. On the other hand, the typical cluster of constraints that impairs family support to children's education could not be identified. Thus, the findings suggest that all resilient families resemble one another, but each vulnerable family is vulnerable in its own way.

**Keywords:** family, education, vulnerable groups, COVID-19

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PARENTAL ROLE CONSTRUCTION IN EDUCATION OF CHILDREN FROM  
VULNERABLE GROUPS AMIDST COVID-19 PANDEMIC

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Based on theoretical models of parental involvement, decisions regarding the mode and intensity of parents' participation in their children's education are highly contingent on the parental role construction. We argue that changes in the quality and management of educational activities during the COVID-19 have strongly affected both the parental self-perceptions regarding their role in children's education and the intensity of their involvement. Participants were parents of primary ( $N = 25$ ) and secondary ( $N = 8$ ) school children from vulnerable groups, namely families with low SES ( $N = 9$ ), children with learning difficulties ( $N = 15$ ) and gifted children ( $N = 9$ ); data were gathered in Spring 2022. Parents' retrospective accounts of children's educational experiences during the pandemic were invited through semi-structured interviews, and were analysed using an inductive qualitative content analysis. Nine separate parental role categories were identified, among which instructional support ( $f = 15$ ), mediating child-teacher communication ( $f = 12$ ) and monitoring child's progress ( $f = 11$ ) appeared as the most frequent ones; the emotional support was the least mentioned ( $f = 3$ ). The greatest expansion of roles was observed in accounts produced by parents of the students in the lower grades of secondary school. Although similar parental roles were recognized by the majority of parents in this sample, there were still some obvious differences in role enactment between certain subgroups: Ensuring access to remote education was a role exclusively reported by parents of students with low SES, while the organisation of out-of-school support was a role present only among parents of children with learning difficulties. Besides that, some differences between parents of primary and secondary school students' were observed: In elementary school, the dominant roles were related to instructional support and mediating communication, while in secondary school, there were roles related to providing emotional support and motivation for learning. Findings further suggest that parents regularly reported either that their engagement in children's education intensified, or that it remained equally high as before the pandemic, in both cases due to the need to offset limitations of what the school could provide during this period. Also, in primary schools, more often than in secondary, parents described that their role intensified during the pandemic. This increase in engagement was qualified as a negative experience, especially among parents with lower parental self-efficacy, those who perceived their skills and knowledge as inadequate to support the child's learning, and in families with unbalanced division of parental responsibility. The study shows that parental support was a critical factor in efforts to bridge gaps in learning continuity among students from vulnerable groups during the pandemic. Consequently, family resources become a key factor determining the quality of education a child has received.

**Keywords:** parental role construction, education, vulnerable groups, COVID-19

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UNIVERSITY STUDENTS’ SELF-REGULATED LEARNING IN AN ONLINE  
CONTEXT: A LATENT PROFILE ANALYSIS

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Self-determination theory (SDT) proposes that students’ academic behavior is underpinned by a series of behavioral regulations organized along a continuum of self-determination. During the COVID-19 pandemic, universities had to transition to online teaching and learning, which often challenged students’ autonomous motivation for learning. The goal of this study was to identify the most common configurations (or profiles) of academic self-regulation among university students in an online setting during the pandemic, as well as the relationships of profiles and academic achievement and the number of passed exams. The sample consisted of 499 students (79% female) from different faculties, aged 18 to 36 ( $M = 21.94$ ). The Academic Self-Regulation Questionnaire (SRQ-A), aimed to measure External, Introjected, Identified, and Intrinsic self-regulation, was adapted to measure self-regulation in the online context. After psychometric subscale analysis, the SRQ-A was reduced to 17 items with good model fit indices (CFA results:  $CFI = .90$ ,  $RMSEA = .08$ ,  $SRMR = .06$ ). Latent profile analysis revealed five profiles. The Introjected profile (17.6%) was characterized by students with high scores on Introjected self-regulation and lower scores on all other dimensions. Students representing the Controlled profile (14.8%) had higher scores on Introjected and External self-regulation, but very low scores on Identified and Intrinsic self-regulation. The Autonomous profile (15.2%) was represented by students who had higher scores on Intrinsic and Identified self-regulation. Students within the Non-motivated profile (33%) had low scores, and those within Moderate profile (19.4%) had moderate scores on all scales. ANOVA analysis showed that students with more autonomous profiles had better academic achievement ( $F(4, 494) = 3.66$ ,  $p < .01$ ) and passed more exams ( $F(4, 494) = 4.55$ ,  $p < .01$ ) than other profiles. Even though the obtained results of self-regulation profiles are in line with previous SDT studies in a face-to-face learning context, these results highlight the biggest percentage of Non-Motivated students, which might be indicative for future understanding of online learning and the upcoming digital educational era. Furthermore, it can be concluded that students who learn out of curiosity and find pleasure in the learning process outperform students with more controlled motivation, even in the online context; the same is true in non-pandemic and face-to-face educational context.

**Keywords:** Self-determination theory, self-regulation, online learning, latent profile analysis, academic achievement

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EXPECTANCY, VALUE, AND COST AS PREDICTORS OF STUDENT  
ACHIEVEMENT IN LATE ELEMENTARY SCHOOL STUDENTS

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Motivation is one of the key predictors of school achievement. According to the expectancy-value-cost (EVC) model, motivation is a product of three main factors: 1) students' expectations / self-efficacy (E) about their ability and probability of success in the future, 2) students' perceived value (V) of a task, and 3) students' perceived cost (C), i.e., negative consequences of engaging in a task. Previous research has shown EVC model to be a good predictor of school achievement for older students (e.g., high school or college), especially for individual school subjects. In this study, we wanted to test how self-reported EVC dimensions predicts a general achievement of late elementary school students. Since previous achievement is determinant of both future achievement and self-efficacy, we also wanted to test to what extent students' expectations (E) of achievement can incrementally explain an actual achievement above a previous achievement. Sample comprised 306 elementary school students from 8th & 9th grades (age:  $M = 13.90$ ,  $SD = 0.74$  years). The EVC dimensions were measured for school learning in general, by an adapted EVC scale, comprised of 24 7-point Likert items (E: 6 items,  $\omega = .88$ ,  $M = 4.55$ ,  $SD = 1.18$ ; V: 6 items,  $\omega = .88$ ,  $M = 4.36$ ,  $SD = 1.23$ ; C: 12 items,  $\omega = .84$ ,  $M = 3.66$ ,  $SD = 1.16$ ). School achievement was represented by the GPA from both the last school year ( $GPA_Y$ :  $M = 3.94$ ,  $SD = 0.72$ ) and previous semester ( $GPA_S$ :  $M = 3.71$ ,  $SD = 0.85$ ), with the latter being a very recent measure. The EVC dimensions predicted 22.2% of the  $GPA_Y$ 's and 24.9% of the  $GPA_S$ ' variance, with  $GPA_Y$  predicting 61.1% ( $\beta_Y = .78$ ,  $p < .001$ ) of the  $GPA_S$ ' variance. When EVC dimension were regressed above the  $GPA_Y$ , they explained additional 3.1% ( $\Delta p < .001$ ) of the  $GPA_S$ ' variance, with E ( $\beta = .14$ ,  $p = .003$ ) and C ( $\beta = -.11$ ,  $p = .001$ ) being significant predictors of achievement incrementally to students' prior achievement (with no significant contribution of V:  $\beta = -.01$ ,  $p = .846$ ). Due to the compulsory nature of elementary school, where all the subjects are presented as mandatory, students arguably do not have an opportunity to do a critical value analysis of school subjects and learning, which could be a reason for no added value of V, and modest value of C. Most importantly, E was predictive of achievement above the previous achievement, showing that a 'subjective', i.e., self-assessed portion of students' self-efficacy has an added explanatory value for students' academic success, even at elementary school level.

**Keywords:** expectancy, value, cost, motivation, student achievement

COMMON MISCONCEPTIONS ABOUT COLLABORATIVE PROBLEM SOLVING  
AMONG HIGH SCHOOL STUDENTS

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Broadly speaking, collaborative problem solving (CPS) denotes a joint activity of a dyad or a small group which is directed toward performance or a desired goal state. CPS has been widely recognized as one of the essential 21st-century skills but is nevertheless rarely formally taught or modelled by educators. Thus, it seems that a more systematic approach for developing these skills, through regular curricula with appropriate support and scaffolding by teachers, is needed to produce positive effects on the achievement and social relations of students. The current study sought to investigate the common understanding of collaboration among highschoolers; current findings will serve as one of the inputs for the development of the PEER-model training of CPS that will help in overcoming potential misconceptions and building students' CPS skills at school. A total of 31 students (17 female) from six secondary schools in Belgrade were interviewed about experiences and attitudes relating to CPS. Several palpable misconceptions of collaboration emerged in students' answers through the results of thematic analysis. Firstly, students generally acknowledged that collaboration, which encompasses idea-sharing and argumentation, is an important life skill. Nevertheless, their description of collaboration shows that this process is too often equated with an efficient division of tasks among team members. Next, although the true nature of CPS is captured by the phrase "thinking together", students often accentuate the importance of organizational skills, capabilities, and knowledge of (in)formal group leaders. According to students, opposing views are a source of conflict that surely leads to failure, while "being on good terms" with other group members guarantees success. To follow, contrary to findings of extant research showing that teachers are indispensable in enhancing cognitive and group processes in CPS, students often marginalize the teacher's role in student collaboration by reducing it to instructional, organizational, and assessment tasks. Finally, some participants see CPS as appropriate only for younger children or as a tool for fixing grades and earning good marks. Our findings indicate that students' misconceptions of CPS could indeed pose barriers to successful collaboration, which is why any systematic attempt to train CPS skills in school needs to correct these first.

**Keywords:** collaborative problem solving, collaboration, misconceptions, high school students, training

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LEADERS IN HIGH SCHOOL COLLABORATIVE PROBLEM-SOLVING GROUPS:  
WHO ARE THEY AND ARE THEY REALLY NEEDED FOR SUCCESSFUL  
COLLABORATION?

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During collaborative problem-solving (CPS), team members take on different roles in the group (Mercier et al., 2014). Among these roles, the leader role has been by far the most empirically investigated. Previous research focused on examining leader characteristics, leader-member relationships, and leader assignments during collaboration to identify leader-related factors that facilitate productive CPS. The present study examined the common understanding of the leader role among highschoolers, based on their previous involvement in CPS during school tasks and projects. Data were collected using a semi-structured interview on a sample of 31 students (17 female) from six schools in Belgrade. Students' retrospective accounts on leadership were evoked using open questions focusing on their previous experiences with leadership during CPS, understanding of the leader role, and perceived (dis)advantages of leadership emergence during teamwork. Following the coding of interview transcripts, 60 coded segments were analyzed using thematic analysis. Almost all interviewed students ( $N = 28$ ; 98%) reported an experience of having a team leader, which either spontaneously emerged during group-work or was teacher-appointed prior to group-work. Among 29 students answering questions about leadership, 17 (59%) asserted that teams should have a leader, stating the following reasons: coordination and monitoring ( $f = 10$ ), authority over team functioning ( $f = 4$ ), assuming responsibility for potential task failure ( $f = 2$ ), conflict prevention ( $f = 1$ ). Nine students (31%) uttered against leader establishment during CPS, because of their: negative experiences with authoritarian leaders ( $f = 4$ ), high commitment to team member equality ( $f = 3$ ), and conviction that it can weaken communication ( $f = 1$ ) or deteriorate friendships ( $f = 1$ ). The final three interviewees (10%) thought that having a leader can be beneficial (with similar reasons as the pro-leader group), but only if the leader is not too controlling. While describing their usual group leaders, students referred to peers who are perceived as the most: a. experienced in group work, b. knowledgeable about the topic, c. skilful in communication and negotiation, and d. hard-working. Our current findings largely correspond to extant findings on the difference between efficient and authoritarian leadership, while also providing important insights into the dynamics of collaborative peer interactions within the Serbian educational context.

**Keywords:** collaborative problem solving, collaboration, leaders, high school students, type of leadership

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QUALITATIVE STUDY OF THE DYNAMICS OF ADOLESCENTS' SENSE OF  
ACADEMIC FUTILITY

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A culture of academic futility is shared among low-track students leading to their belief that they lack control over their educational outcomes and the expectations that their investment in education will not pay off. *The Model of Agonistic Self* (MAS) offers an understanding of the processes behind anti-school attitudes in terms of opposing tendencies towards dominance and pluralism in the multivoiced self. The aim of this exploratory case study was to analyze whether students with anti-school attitudes and those with pro-school attitudes differ in the contents of the voices of their multiple selves as well as in the relationships between those voices. Fifteen vocational school students interviewed about the voices that shape their thoughts about school and the relationships between those voices. The transcribed materials were analyzed applying theoretical and methodological categories of voice functions, types of their relations and broad patterns of their interactions that make up the six-constellation model. First individual and then cross-case analysis revealed key features of stable and transitory constellations of voices that are common to students with a strong sense of futility and distinguish them from the other group. The main similarity is that the stable constellation of all participants is dominated by voices that personify the beliefs that it is important to be successful, by having high earnings, and providing a quality life for the family. The main difference concerns the position in the stable constellation of voices that personify the purpose of education. For those with anti-school attitudes, such voices are suppressed by the dominant, and this results in withdrawal from an effort of school learning. In adolescents with pro-school attitudes, voices that affirm education are the main voices' role models or collaborators, who ensure that the values of personal success are realized through education. Also, an important difference concerns the transitory constellation Value Conflict. It is more common among advocates of education meaning that there are frequent conflicts between the voices of the futility of education and those who personify pro-educational values. The absence of conflict between pro-school and anti-school values in the agonistic self of adolescents with anti-school attitudes indicates the process of self-radicalization which makes it even more difficult to appreciate perspectives that affirm education.

**Keywords:** sense of futility, agonistic self, vocational school, self-radicalization, qualitative study

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CHALLENGING OR STAYING LOYAL TO THE STATUS QUO: MOTIVATION OF STUDENTS FROM INFORMAL ROMA SETTLEMENTS TO PURSUE SECONDARY EDUCATION

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The representation of children from the Roma population in secondary education in Serbia (28%) is significantly lower compared to children from the majority population (94%). However, studies addressing socio-psychological aspects of this gap are rather scarce. We aimed at exploring the motivation of students from informal Roma settlements to pursue secondary education from the perspective of Expectancy-Value Theory (EVT; Eccles & Wigfield, 2002). The EVT postulates that engagement in a specific activity is motivated by the subjective value of the activity and a person's expectation of success in the activity. Through semi-structured interviews, we explored how Roma students perceive the value of secondary education and what they expect from themselves regarding secondary education. The study included 10 primary school students (6 boys and 4 girls), who live in informal Roma settlements. Qualitative thematic data analysis was used for data processing. The majority of participants (4 boys and 4 girls) claim that they would like to continue their education. In the students' accounts related to the value of secondary education, the most prominent is utility value, i.e., secondary education is perceived as a means to ensure better living conditions for them and their families. Participants' expectations of their own success in a secondary school are predominantly based on their previous experiences in the role of a student. These educational experiences are often associated with negative emotions, emerging from the lack of learning support in school and family environments, discouraging relationships with teachers and peers, the unfamiliar language of instruction, over-demanding tasks, as well as a lack of information on career options. However, all participants attribute their potential achievements in secondary school to the effort, which could be protective of their motivation. Students perceive that progress toward secondary education could provoke the Roma community's negative reactions (e.g. envy, jealousy), suggesting the important role of community expectations regarding education. Overall, our participants' narratives regarding progress toward secondary education could be described as a conflict between reaching for a better life and staying loyal to the community norms. The obtained data indicate the importance of ensuring a supportive environment in a primary school, as well as increasing the subjective value of education in the wider community.

**Keywords:** Expectancy-Value Theory, motivation, Roma, education, educational aspirations.

The findings presented in the paper were part of the master thesis „Motivation of Roma students from informal settlements to study in secondary school“, defended in 2022 at the Faculty of Philosophy, University of Belgrade.



CONSTRUCTING THE NOTION OF DOING MATHEMATICS IN TRANSITION FROM  
THE FIRST TO THE SECOND CYCLE OF ELEMENTARY EDUCATION

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Students' ideas of mathematics and themselves as mathematics learners impact how they engage with the subject. During the first cycle of compulsory education, mathematics is introduced to the students from a more constructivist perspective - through curricula, textbooks, and teachers' ideas of mathematics and teaching. However, in the second cycle, with subject teaching, these mediators of mathematics often come with a more absolutist view. Thus values and meanings that students use to organize their understanding and experience of mathematics often become more restrictive as students start the second cycle of compulsory education. This narrative study explores how elementary school students construct their notion of doing mathematics and whether those ideas differ at the end of the first and the beginning of the second cycle of compulsory education. As data collection tool, we used dynamic storytelling and elicited narration in two genres. Fourth- and fifth-graders were instructed to write a story about a peer doing mathematics and to write a letter to a peer who has not encountered (fifth-grade) mathematics yet. The gender of the story's protagonist (i.e., the recipient of the letter) was randomly assigned to each participant. A total of 220 students (32% fourth grade; 46% boys) from five elementary schools wrote the stories and letters. Thematic analysis was used to identify the main themes of the stories/letters. The first results indicate that most of the story plots assumed that the protagonist faced an obstacle while doing mathematics. In 20% of such narratives, a protagonist is seeking help, and in 15% (s)he is stressed out. In some stories, a protagonist is portrayed as failing mathematics (7%), while some stories presented a group of students shaming a protagonist for succeeding in mathematics (5%). The rest of the stories (35%) depicted the protagonist passionately doing mathematics, often conveying a heroic image. Three types of letters were identified: 53% emphasized the importance of hard work for success in mathematics, and 28% positively depicted mathematics. In contrast, 9% presented mathematics as difficult and warned their peers to "brace themselves". Chi-square and ANOVA tests revealed that the students' selection of themes was related to their grade, achievement, and liking of mathematics. At the same time, no association with the gender of the protagonist or the narrator was found.

**Keywords:** narratives, mathematics, dynamic storytelling, elementary education, students

TEACHER`S CHARACTERISTICS AS PREDICTORS OF PERCEPTION OF CLARITY  
IN TEACHING, CLASSROOM MANAGEMENT AND ACADEMIC ACHIEVEMENT IN  
MATHEMATICS AMONG STUDENTS

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This study examines how teacher`s characteristics such as professional development of the teacher, job satisfaction, and work experience predict perception of clarity in teaching, perception of classroom management, and student`s academic achievement in Mathematics, among fourth grade students. It is assumed that the teacher`s professional development, job satisfaction, and work experience are positively related with perception of clarity in teaching, perception of classroom management and students' academic achievement. The research was carried out in April 2019 within the framework of the International study TIMSS 2019. The sample consisted of 2,680 students in fourth grade and 197 teachers from 150 primary schools in the Republic of North Macedonia. The choice of schools and classes was made according to the methodology of random selection by the International Organization for Evaluation of Student Achievements – IEA. The data were collected through questionnaires intended for teachers and students and test of knowledge in Mathematics. Questionnaires for the teachers were: Professional development in subject Mathematics (training); Work experience and The teacher`s job satisfaction. Questionnaires intended for students were: Clarity in teaching, Management of the class and 14 tests in Mathematics for fourth grade. A linear regression analysis was performed. It was found that students have higher achievements in Mathematics if their teachers dedicated more time to their professional development ( $\beta = .075$ ,  $t(2,873) = 3.867$ ,  $p < .01$ ), have more work experience ( $\beta = .059$ ,  $t(2,873) = 3.062$ ,  $p < .01$ ), and are more satisfied with their profession ( $\beta = .096$ ,  $t(2,873) = 4.962$ ,  $p < .01$ ). It was also confirmed that perception of classroom management can be predicted by teacher`s professional development ( $\beta = .045$ ,  $t(2,873) = 2.342$ ,  $p < .01$ ), job satisfaction ( $\beta = .102$ ,  $t(2,873) = 5.267$ ,  $p < .01$ ), and teacher`s work experience ( $\beta = .054$ ,  $t(2,873) = 2.787$ ,  $p < .01$ ). On the other hand, professional development, work experience and job satisfaction of teachers, did not prove to be significant predictors of perception of clarity of teaching among fourth grade students. Findings of this study arises the need for greater and continuous professional development of teachers, increasing their job satisfaction, as well as helping teachers with less work experience, all with the aim of improving student's learning outcomes.

**Keywords:** teachers, clarity of teaching, classroom management, student, achievement

BEYOND THE GRADE POINT AVERAGE: MEASURING A BROADER SET OF  
UNIVERSITY STUDENTS' ACHIEVEMENT MARKERS

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University students' academic achievement is typically represented by the Grade Point Average – GPA. However, student success is not synonymous with the GPA, as an argument can be made that obtaining an internship or scholarship, being a tutor to others, getting a paper published, etc., can all be viewed as markers of achievement, which may or may not be related to the GPA. We wanted to explore how such 'broader set of achievement markers' (abbrev. BSAM) is related to the GPA, as a 'traditional' measure of achievement. Furthermore, we wanted to determine if the BSAMs are correlated with the known determinants of achievement, namely intelligence and personality traits. The sample consisted of 228 Republic of Srpska's university students (2<sup>nd</sup> year and higher) from various scientific fields. Participants self-reported their GPA and marked their achievements using a list of 15 BSAMs, including: volunteering, internships, scholarships, publications, awards, student exchanges, informal educations, tutoring others, etc. We also measured participants' Big 5 personality (i.e., 'OCEAN') and intelligence (matrix, numerical, and verbal reasoning). The results show that all BSAM categories except failing/repeating a year grouped into a single latent BSAM factor (66% variance,  $\omega = .96$ ), which was functionally unrelated to the GPA ( $r = -.003$ , both with or without an adjustment for the field and year of study). Higher GPA was related with higher intelligence ( $r = .21, p = .002$ ) and Openness ( $r = .26, p < .001$ ). Surprisingly, however, even after an adjustment for a field and year of study, higher BSAM total score was related to lower intelligence ( $r = -.15, p = .030$ ) and lower Conscientiousness ( $r = -.15, p = .010$ ). On the individual BSAM category level, almost all correlations with intelligence (most notably: receiving scholarships and academic awards, article publishing, assisting professors) and Conscientiousness (most notably: receiving scholarships and academic awards, having internships and informal educations) were negative. While most of these correlations did not reach conventional levels of significance, or retain significance after adjusting for multiple effects, they do point to a peculiar, perhaps even worrying trend of 'negative selection', where many of the broader achievement markers and incentives offered to students (e.g., scholarships), that should arguably be earned by knowledge, ability, persistence, and dedication, could arguably be achieved relying on the opposite.

**Keywords:** grade point average (GPA), broader student achievement markers, Big 5 personality, intelligence

THE PRELIMINARY VALIDATION OF THE FOGG BEHAVIOR MODEL (B=MAP) IN  
HYPOTHETICAL INFORMAL EDUCATIONAL CONTEXT

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The Fogg Behavior Model, a.k.a. ‘B=MAP’ model, proposes that three simultaneously converging elements determine if a Behavior will occur: Motivation (i.e., underlying physical, emotional, and social drives), Ability (i.e., how simple is to perform a behavior, in terms of time, mental energy, breaking a routine, etc.), and a Prompt (i.e., a type of trigger that will set things in motion). While the B=MAP model has been utilized among ‘popular psychology’ audiences, it has not received many formal academic considerations. Thus, we conducted a preliminary scientific validation study of this ‘popular’ behavioral change framework, examining it specifically in the context of informal education. We constructed three hypothetical experimental B=MAP scenarios, with a participant assuming a role of someone who needs to: S1) write a project for an NGO (which can result in obtaining a scholarship), S2) master a new learning technique, and S3) pass an everyday financial management skills course. Each scenario had a cost-to-benefit dilemma and three Prompt level variations (i.e., low, medium, and high Prompt, contrasted by increasing Ability demands in time, routine, and mental energy). The sample comprised 246 B&H university students (71% women; age:  $M = 22.63$ ,  $SD = 2.40$  years). Participants were given all three scenarios in the matching Prompt conditions, i.e., either all three low ( $N = 84$ ), medium ( $N = 80$ ), or high ( $N = 82$ ), followed by the scenario-specific self-rated questions about their perceived M, A, and P, and the intent to conduct the Behavior outlined by the scenario. We also measured a self-assessed general dispositional interest for the contents of hypothetical scenarios (e.g., interest in writing NGO project proposals in general). Moderation analyses showed that the level of P did not influence any of the effects, thus all the analyses were done on all three levels combined. Adjusted for prior dispositions, M, A, & P explained 27.8% of intended Behavior change’s variance for S1 ( $\beta M = .26$ ,  $p < .001$ ;  $\beta A = .37$ ,  $p < .001$ ;  $\beta P = .13$ ,  $p = .013$ ); 43.9% for S2 ( $\beta M = .41$ ,  $p < .001$ ;  $\beta A = .23$ ,  $p < .001$ ;  $\beta P = .16$ ,  $p = .016$ ); and 53.5% for S3 ( $\beta M = .43$ ,  $p < .001$ ;  $\beta A = .38$ ,  $p < .001$ ;  $\beta P = .09$ ,  $p = .094$ ). While limited to a context of hypothetical informal educational situations, these preliminary results mostly confirm that MAP model can, in fact, be a strong framework for predicting behavioral change, although the role and relative contribution of Prompt seems less reliable and requires further investigation.

**Keywords:** behavioral change, motivation, prompt, informal education, ability

ENGAGED WHILE LEARNING IN AN ONLINE CONTEXT

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The changed learning environment caused by the pandemic prompted a need for new instruments that could evaluate the learning process in an online setting. The aim of this study was to translate into Serbian, adapt to an online learning context and validate Reeve and Tseng's Engagement Questionnaire developed to assess behavioral, cognitive, emotional, and agentic engagement of students. Student engagement is defined as the intensity of productive involvement in studying. As explained by the Self-Determination Theory, student engagement is energized by motivation and is essential for successful learning. The behavioral engagement scale refers to students' attention and effort during class attendance, cognitive to the mental effort that students invest in understanding presented content, emotional to their feelings during online attendance, and agentic to their initiatives that constructively contribute to the learning process. Besides the validated Engagement Questionnaire, the Academic Self-Regulation Questionnaire consisted of External, Introjected, Identified, and Intrinsic subscales adapted to the online context was used. CFA confirmed the fit of its measurement model ( $CFI = .90$ ,  $RMSEA = .08$ ,  $SRMR = .06$ ). The scores on subscales were used for the calculation of the Relative autonomy index (RAI) measure of Autonomy motivation. The reliability of all scales was adequate since Cronbach's alphas of scales ranged from .72 to .87. The sample consisted of 499 students, mostly first-year university students (79% female), aged 18 to 36 years ( $M = 21.94$ ). The four-dimensional structure of the engagement questionnaire was confirmed with CFA after minor respecifications ( $CFI = .93$ ,  $RMSEA = .07$ ,  $SRMR = .06$ ). The factor loadings ranged between .55 and .84 indicating acceptable convergent validity. The research partly confirmed the validity of the adapted four-dimensional scale. Unexpectedly, there were strong intercorrelations between Behavior and Emotional engagement ( $r = .85$ ) suggesting poor discriminant validity between them. Other factor intercorrelations ranged from .52 to .70. Strong correlations between dimensions contradict the results of previous applications of the original instrument. The finding indicates that online context simultaneously activates all dimensions, but it also urges further investigation of their specific characteristics in online settings. Pearson correlations between scores on engagement dimensions and RAI ranged from .23 to .41, contributing to the theory that recognizes engagement and autonomous motivation as different concepts.

**Keywords:** self-determination theory, student engagement, online learning, university students

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SCHOOL ENGAGEMENT OF HIGH SCHOOL STUDENTS: GENDER AND AGE DIFFERENCES

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School or student engagement is widely recognized as a multidimensional construct that encompasses three aspects of engagement – cognitive, behavioral and emotional. Research suggests that school engagement is associated with multiple students outcomes, including academic achievement, school completion, and social-emotional adjustment. Therefore, the aim of this study is to assess the engagement of high school students and to examine differences in the level of engagement by gender and age so that we can determine which students are at greater risk for various negative outcomes. Data on students' engagement were collected using the *Delaware Student Engagement Scale* (four-point Likert-type scale). The results of the confirmatory factor analysis did not yield three separate factors, but instead showed that the items of the behavioral and cognitive engagement subscales were best represented by one factor. Thus, the scale consists of only two subscales: cognitive/behavioral engagement (8 items) and emotional engagement (4 items). The sample consisted of 860 students (59.6% female) from Belgrade secondary schools, aged from 15 to 19 ( $M = 16.38$ ,  $SD = 1.05$ ). The results show that students are engaged to a considerable extent at the cognitive/behavioral level ( $M = 3.22$ ,  $SD = 0.66$ ) and to a lesser extent at the emotional level ( $M = 2.85$ ,  $SD = 0.91$ ). When looking at the total scores on the cognitive/behavioral engagement subscale, statistically significant difference in the level of engagement by gender were found,  $t(786) = 2.29$ ,  $p < 0.05$ ,  $d = 0.17$ , indicating a slightly higher engagement of female students, while no such differences were found on the emotional engagement subscale,  $t(798) = 1.67$ ,  $p = .10$ ,  $d = 0.12$ . In addition, a weak negative correlation was found between student age and level of engagement on the cognitive/behavioral ( $r = -.15$ ,  $p < .001$ ) and emotional engagement subscales ( $r = -.22$ ,  $p < .001$ ). In summary, the results of this study showed that high school students' engagement is at middle level, with girls being slightly more engaged in cognitive/behavioral aspects and younger students generally more engaged compared to older ones. This knowledge is important from the perspective of prevention science and strengthening protective factors in the school environment, such as student engagement, that can contribute to positive developmental outcomes of students.

**Keywords:** school engagement, student engagement, high school students

HOW DO REFUGEE CHILDREN FROM AFGHANISTAN PERCEIVE THEIR  
PREVIOUS AND FUTURE EDUCATION

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A large migration wave from Asia to Europe (since 2014) has also affected Serbia. The government and NGOs have been involved in humanitarian assistance, including the enrollment of refugee children in public schools, where they are prepared for education in the (Western) destination countries. In order to understand the educational perspectives of these children, it is important to consider their past experiences, as well as their future expectations. We used the questionnaire with open-ended questions referring to the perception of education. A total of 250 children (54.4% male), aged 10 to 14 ( $M = 12$ ;  $SD = 1.38$ ) from Afghanistan who were residing in Belgrade in 2019 participated. The interpreters for Dari and Pashto interviewed them. Two independent coders categorized the obtained responses; the agreement between them was 92.24%. Data were analyzed using descriptive statistics and  $\chi^2$  test. When asked to name up to three general associations that refer to school, 45.6% (114) of respondents mentioned “I haven't attended school” as the only association. 52.8% (132) mentioned school subjects and obligations, 26.4% (66) mentioned socializing with peers, and 26.4% (66) mentioned material items from school. Only 39.2% (98) respondents went to school in Afghanistan (more boys than girls ( $\chi^2(249) = 9.24$ ;  $p = .002$ )). 54.7% of them stated that they were well integrated, 15.8% had personal and general problems fitting in, and 15.8% had problems due to belonging to a certain group (e.g., ethnic). Only 11.1% of them stated that their perspective in their native country could have been good. 60% (150) of respondents believe that they can achieve their career ambitions with the help of school, and among them, as many as 94.68% (142) want to continue their education in the countries of Western Europe. When it comes to expectations from the destination country, the majority (48.2%) have some kind of general positive expectation, 20.6% expect difficulties, and 12.8% expect only the continuation of education. As for obstacles, 50.7% named language learning, 30.3% - getting used to a new way of life, and 28.2% - prejudices among the residents of the destination country. The results show that a large number of children (especially girls) from Afghanistan had their right to education violated in the country of origin, and the majority of the refugee children do not have clear expectations about education in the destination country, but they are aware of the potential obstacles.

**Keywords:** education of refugees, migrations from Afghanistan, perception of education, education in Serbia, education in Afghanistan

*ORGANIZATIONAL PSYCHOLOGY*

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NUMERACY AS A COVARIATE OF THE BASE RATE NEGLECT IN FUTURE HR MANAGERS

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Base rate neglect (BRN) refers to the human tendency to neglect explicitly given a priori probabilities while reasoning about probabilities. This phenomenon is registered throughout many domains of cognitive functioning. Inaccurate reasoning based on probabilities in management may lead to unnecessary inefficiencies and losses. Within the human resources (HR) management, predicting employees' behavior based on probabilities is often a task for HR managers. In order to reduce potential errors during the predicting of employees' behavior, it is of importance to identify the presence of such errors and understand the related factors that might be relied on in reducing them. Numeracy is shown to be one of the factors that improve reasoning about probabilities. Although some cognitive biases are already registered in HR managers, we haven't found direct experimental data that illustrate the presence of BRN among them. Therefore we aimed to explore if BRN is present in future HR managers, and if their numeracy is a significant covariate of this relationship. Participants ( $N = 65$ ), who were postgraduate students of HR management, solved 10 BRN tasks in form of vignettes, that represented hypothetic situations from HR management domain. At each task, the subjects were suggested to predict an employee's behavior on the scale, based on probabilities given in the lead. Tasks differed within subjects, in representativity of the description of the employee, yielding two different variants for each of the five tasks. Hence, we computed the proportions of the biased answers for every participant for both variant of each task. Besides, participants solved numeracy test that involved tasks assessing basic knowledge about chances and probabilities. The one-way repeated-measures ANCOVA revealed that the proportion of biased answers is significantly higher on the representative tasks ( $F(1,64) = 11.742, p = .001, \eta^2 = .062$ ) and that the numeracy is not a significant covariate of representativeness ( $F(1,64) = .025, p < .876$ ). This result indicates that BRN is present among the future HR managers and draws attention to the need to develop procedures for improvement of reasoning based on probabilities of HR managers'. The fact that numeracy doesn't adjust this relationship might be explained by its prevalently higher scores and reduced variability in our sample.

**Keywords:** base rate neglect, numeracy, reasoning based on probabilities, HR management

JOB CHARACTERISTICS AND SICKNESS ABSENTEEISM: EVIDENCE FROM  
PUBLIC ADMINISTRATION

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The situation of COVID-19 has arisen a wide range of challenges in establishing adequate working conditions and managing the absence of employees in different occupations. Public administration serves communities to advance the common good and it is necessary to provide an adequate psychosocial work environment that will reduce the rate of sickness absenteeism in organizations, especially in times of uncertainty. The main goal of the research is to determine do job characteristics predict the rate of sickness absenteeism and whether the socio-demographic characteristics of employees and the size of the organization affect the rate of sickness absenteeism and the expressiveness of job characteristics in public administration. The research was conducted on 181 employees of different socio-demographic characteristics in public administration during the COVID-19 crisis in 2021 and 2022. Job characteristics were measured by Job Characteristics Inventory Description which operationalizes six job characteristics: variety, autonomy, feedback, dealing with others, task identity, and friendship. Sickness absenteeism at the workplace was operationalized by the self-report question: "During the past 12 months, how many days were you absent from work due to illness?" The sickness absenteeism was ranged from 0 to 60 days ( $M = 7.44$ ;  $SD = 10.31$ ). The results have shown that all measured job characteristics are higher than average, with the highest scores in task identity ( $M = 4.08$ ;  $SD = .706$ ) and friendship ( $M = 4.07$ ;  $SD = .792$ ). Job characteristics are not significant in the prediction of sickness absenteeism ( $R^2 = .026$   $F(2,178) = .369$ ;  $p > .05$ ). Gender is not a significant factor in sickness absenteeism and expression of job characteristics. Age and length did not show a significant correlation with sickness absenteeism. Task identity increases by age ( $r = .156$ ;  $p < .05$ ) and by the length of service ( $r = .157$ ;  $p < .05$ ). Friendship decreases with the age ( $r = -.153$ ;  $p < .05$ ). The size of the organization is not a significant factor in sickness absenteeism and job characteristics. COVID-19 exposed the employees in public administration to extensive health risks, and pushed aside the working environment as the factor of the sickness absence. In job design, HRM should take into consideration the importance of completing the work with a visible outcome, for older employees with longer service and nurturing the climate of friendship in the workplace when it comes to younger employees.

**Keywords:** job characteristics, sickness absenteeism, public administration, employees

JOB CHARACTERISTICS AS SIGNIFICANT PREDICTORS OF EMPLOYEES'  
HEALTH IN PUBLIC ADMINISTRATION

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Job characteristics represent a significant factor that affects the work motivation and productivity of employees by achieving specific states of mind. There is a lack of evidence that determines to what extent the working conditions matter when it comes to the employees' health in public administration. The research problem determines does job characteristics predict the mental and physical health of employees of different socio-demographic categories in public administration. The research was conducted on 181 employees in public administration. The sample consisted of 62 (34.3%) male employees and 119 (65.7%) female employees. The age of the respondents was ranged from 20 to 65 years ( $M = 44.66$ ;  $SD = 10.039$ ). Length of service was ranged from 0 to 40 years ( $M = 17.38$ ;  $SD = 10.37$ ). In order to measure physical and mental health two scales were used - The General Health Questionnaire – GHD-28 and Mental Health Inventory MHI-5. GHD-28 measures four health aspects: somatic symptoms, anxiety/insomnia, social functioning, and depression while MHI-5 measures overall mental health. Job Characteristics Inventory Description was used as a measure of employees' perception of the job characteristics. The questionnaire measures six job characteristics: variety, autonomy, feedback, dealing with others, task identity, and friendship. The results of the multiple regression analysis showed that job characteristics are not significant predictors of overall mental health, somatic symptoms, and depression ( $p > .05$ ), but job characteristics are significant predictors of anxiety/insomnia and social functioning. Specifically, feedback ( $\beta = .168$ ;  $p = .045$ ) and friendship ( $\beta = -.176$ ;  $p = .046$ ) are significant predictors of anxiety/insomnia. Task identity ( $\beta = .247$ ;  $p = .003$ ) significantly predicts the social functioning of employees in public administration. It can be concluded that job characteristics are predictive for specific health outcomes among the employees in public administration. These findings extend the knowledge about the relationship between work and employee health, showing how the way and conditions of work have effects on the health status of employees.

**Keywords:** job characteristics, mental health, general health, public administration, employees

PUBLIC ADMINISTRATION IN THE TIME OF CRISIS: ARE THE EMPLOYEES SICK  
& TIRED?

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The consequences of COVID-19 are still a worldwide challenge and it affects people in personal and social functioning. New circumstances provided a serious threat to the health of employees, which can disrupt their performance. Knowing that employees in public administration play a significant role in archiving policy goals, the HRM should support and promote the health of the employees as one of the main principles of good governance. The aim of the research is to determine whether different socio-demographic characteristics of employees in public administration affect the level of their health during the crisis. The research was conducted on 181 employees in public administration during COVID-19 crisis in 2021 and 2022. The sample consisted of 62 (34.3%) male employees and 119 (65.7%) female employees of different age ( $M = 44.66$ ;  $SD = 10.04$ ) and length of service ( $M = 17.38$ ;  $SD = 10.37$ ). Variables were measured by two scales - The General Health Questionnaire (GHQ-28) and Mental Health Inventory (MHI-5). GHQ-28 measures four dimensions: somatic symptoms, anxiety, social dysfunction, and depression, while MHI-5 measures the overall mental health of the respondents. All scales were performed in five-point Likert scale format. The mental health of the employees did not indicate specific health issues, the results indicate high scores ( $M = 3.22$ ,  $SD = .41$ ) on this variable. Further, the descriptives of general health dimensions indicate higher levels in social dysfunction ( $M = 3.64$ ,  $SD = .44$ ) among the employees. Both male and female employees showed similar mean scores on mental health ( $t(178) = 1.49$ ,  $p > .05$ ) and dimensions of general health: somatic symptoms ( $t(178) = 1.33$ ,  $p > .05$ ), anxiety/insomnia ( $t(178) = .25$ ,  $p > .05$ ), social dysfunction ( $t(178) = 1.39$ ,  $p > .05$ ), and depression ( $t(178) = .32$ ,  $p > .05$ ). Age and the length of service among the employees did not show a significant correlation with mental health and different aspects of the general health of the employees ( $p > .05$ ). During the crisis, employees in public administration had a tendency to preserve their mental health, but with tendencies toward social maladaptation. The HRM should define the framework for the estimation of maladaptive behavior patterns of employees and control them. Knowing that the impaired mental and general health of the employees could disrupt their performance it should be continuously evaluated even after the COVID-19 crisis when potential health issues are also expected.

**Keywords:** mental health, general health, public administration, employees

POLITICAL SKILLS IN ORGANIZATIONS (PSIO): SCALE CONSTRUCTION AND  
VALIDATION

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Political skill in organizations implies social skills functional for the organizational context. It includes effective adaptation to different situations for the purposes of influencing others in a way that other people perceive as honest and trustworthy (Ferris et al., 2005). Since the only instrument available for assessing political skill was four-dimensional Political Skill Inventory (PSI) made by Ferris et al. (1999), our goal was to construct and validate new instrument, hence two studies were conducted. Political Skills In Organizations (PSIO), self-report measure using 5-Point Likert scale, consists of 5 dimensions: 4 from the original study (Ferris et al., 1999): *Social astuteness*, *Interpersonal influence*, *Networking ability* and *Apparent sincerity*, and 1 additional from the study of Coole (2006), named *Charisma*. There were two samples of employee: one constituted of 403 (77.6% women; age:  $M = 36.14$ ), and second constituted of 290 adults (74.2% women; age:  $M = 36.62$ ). First study was conducted in order to analyze the pilot inventory contained of 74 items. Intercorrelation of the items (ranging from .24 to .67) and the reliability of the scale ( $\alpha$  ranging from .66 to .85) gave satisfactory results, except for *Apparent sincerity* dimension which had lower internal consistency. After applying item analysis, final version of the instrument was created and used in the second study – it contained 52 items, of which 25 negatively reflected. Factor analysis (PCA method, Promax rotation) identified 5 factors which corresponded to the designed dimensions and explained 46% of the total variance, confirming construct validity. The new scale moderately correlated to the original PSI and lowly with most traits of the HEXACO-60 inventory (except for the Extraversion and Conscientiousness, where correlations were moderate), showing good convergent and divergent validity. Discriminant function explained 7.29% of between group variance and demonstrated PSIO's ability to differentiate between employees on higher and lower position with 58.7% success rate. The scale significantly contributed to prediction of general job satisfaction ( $F(5,253) = 5.752, p < .01, adj. R^2 = .084$ ), task performance ( $F(5,253) = 4.927, p < .01, adj. R^2 = .071$ ) and contextual performance ( $F(5,253) = 15.169, p < .01, adj. R^2 = .215$ ). In general, results confirmed good psychometric properties of the scale. Nevertheless, further research is needed, especially in the terms of social-desirability bias.

**Keywords:** political skill, scale development and validation, social competency, organizational psychology

WORK-FAMILY CONFLICT AND TURNOVER INTENTIONS: THE MEDIATING  
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According to the JD-R model, high job demands lead to adverse health-related outcomes, such as burnout and negative organisational outcomes, such as turnover intention. Next to this main effect, the JD-R model proposes that burnout also acts as a mediator between high job demands and adverse organisational outcomes. Although the JD-R model has received much empirical support, it has one limitation – focusing on job demands as the primary source of work-related outcomes while ignoring non-work-related factors. Prior studies show that work-related and home-related factors also influence turnover intention and burnout in addition to job demands. This study aimed to investigate the relationships between work-family conflict (WFC) and family-work conflict (FWC), and employee turnover intention (TI) and to test the mediating role of burnout in these relationships. The sample consisted of 182 (51.6% male) employees with a mean age of 35.20 ( $SD = 9.93$ ), a mean service of 9.93 years ( $SD = 8.47$ ), and 44.5% were married. We used the Work-Family Conflict Scale, Turnover Intention Scale and Oldenburg Burnout Inventory. On a bivariate level, the TI correlate positively with WFC ( $r = .23, p < .01$ ) and FWC ( $r = .27, p < .001$ ), burnout correlates positively with TI ( $r = .62, p < .001$ ), and burnout correlate positively with WFC ( $r = .30, p < .001$ ) and FWC ( $r = .49, p < .001$ ). The Hayes' PROCESS for SPSS was used for mediation analyse. By using a simple mediation model (bootstrapping on 10 000 sub-samples), it was established that the relationship between WFC and TI is entirely mediated by burnout ( $c: \beta_{WFC \rightarrow TI} = .16, p = .036, 95\% CI [0.04, 1.12]$ ;  $c': \beta_{WFC \rightarrow TI} = .05, p = .384, 95\% CI [-0.25, 0.65]$ ;  $axb: \beta_{WFC \rightarrow O \rightarrow TI} = .10, p = .020, 95\% CI [0.06, 0.70]$ ). Also, the relationship between FWC and TI is entirely mediated by burnout ( $c: \beta_{FWC \rightarrow TI} = .22, p = .004, 95\% CI [0.20, 1.11]$ ;  $c': \beta_{FWC \rightarrow TI} = -.06, p = .353, 95\% CI [-0.58, 0.21]$ ;  $axb: \beta_{FWC \rightarrow O \rightarrow TI} = .28, p < .001, 95\% CI [0.52, 1.13]$ ). In particular, higher values of WFC and FWC contribute to higher burnout, which then leads to higher TI. The results of this study extend the JD-R model showing that work-related and home-related factors also influence adverse organisational outcomes, such as TI. Also, obtained results empirically support mediating role of burnout in the JD-R model. Finally, obtained results can be helpful in organisational practice for developing work procedures and policies to reduce turnover intention.

**Keywords:** work-family conflict, family-work conflict, turnover intention, burnout, mediator

CHINESE WHISPERS - WORKPLACE GOSSIP SCALE: FACTOR STRUCTURE

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Interest in trace research has been growing in recent years. Gossip can be defined as the behavior during which information about people is spread from person to person. Workplace gossip involves employees (the sender) communicating with another person at work (the receiver) about someone (the target) who is absent. Workplace gossip can refer to behavior or characteristics that are not necessarily work-related as long as the gossiping process takes place in the work environment. The scientific community still doesn't understand the constructs of workplace gossip, so researchers have used different instruments to measure gossip. The main goal of this research was the construction of a questionnaire to examine the prevalence of traces in the workplace. The study was conducted on a sample of 347 employees with a minimum of one year of service who work in state, private or foreign companies. A five-point Likert-type scale consists of 53 items. Results indicate that it is a valid and reliable ( $\alpha = .92$ ) instrument whose composite structure consists of five dimensions that explain 41% of the variance. The significance of the correlation matrix was determined by Bartlett's test of sphericity ( $\chi^2 = 6934.47, p < .01$ ), and its suitability for factorization were suggested by the Kaiser-Meier-Olkin sampling adequacy test ( $KMO = .88$ ). The decision to retain 5 factors in the further analysis was made based on Horn's parallel analysis, at the same time the five-factor solution was also suggested by the Scree test. Factor 1 consisted of 11 items that explained 20.1% of the variance with factor loadings ranging from .398 to .557. Factor 2 consisted of 9 items that explained 9.3% of the variance with factor loadings ranging from .420 to .741. Factor 3 consisted of 14 items that explained 4.5% of the variance with factor loadings ranging from .312 to .758. Factor 4 consisted of 8 items that explained 3.9% of the variance with factor loadings ranging from .331 to .730. Factor 5 consisted of 11 items that explained 3.0% of the variance with factor loadings ranging from -.314 to -.655. Further research is needed to determine the validity of the measurement instrument.

**Keywords:** construction of pilot instrument, factor structure, gossip questionnaire

*CLINICAL PSYCHOLOGY*

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DEPRESSION IN OLDER ADULTS: TESTING THE BEHAVIORAL MODEL

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Depression is the most frequent mental health disorder in older adults and is often underdiagnosed and undertreated. The behavioral model of onset and maintenance of late-life depression (Fiske et al., 2009) is the only one depicting depression in the elderly, even though it has not been previously operationalized and tested, nor it included any protective factors. First, the aim of the study is to test the original behavioral model, and the model supplemented with protective factors. Secondly, the aim is to compare the relative contribution of each predictor in the models, with depression set as a criterion variable. The sample was convenient and it consisted of 225 older adults ( $M_{age} = 73.5$ ;  $SD_{age} = 6.01$ ; 30% males) from 13 cities in Serbia. The participants filled out 12 questionnaires face-to-face with the help of trained interviewers (HEXACO Emotionality, Coping Inventory for Stressful Situation, Experiences in Close Relationships, Meaning in Life Questionnaire, Duke Social Support, Geriatric Depression Scale, Self-critical Cognitions Scale, The Environmental Reward Observation Scale as well as questionnaires designed for the purpose of this study – Limitation of activities Scale, Stressful Life Events Scale and Changes in Health Scale and Questionnaire on Socio-demographics;  $\alpha = .55 - .87$ ). In total, 32% of older adults had clinically indicative symptoms of depression (20.8% mild, and 10.2% severe). Neither the original [ $\chi^2_{(71)} = 265.441$ ,  $\chi^2/df = 3.739$ ,  $p = .000$ ,  $CFI = .69$ ,  $NFI = .64$ ,  $RMSEA = .11$ ,  $TLI = .55$ ], nor supplemented behavioral model of depression [ $\chi^2_{(89)} = 347.611$ ,  $\chi^2/df = 3.906$ ,  $p = .000$ ,  $CFI = .70$ ,  $NFI = .65$ ,  $RMSEA = .11$ ,  $TLI = 0.54$ ] showed acceptable model fit in structural equation modeling. Nonetheless, the linear regression model is tested to compare the relative contribution of predictors, and explained 56% of the variance in depression ( $R^2_{adj} = .56$ ;  $F_{(12)} = 22.162$ ,  $p < .001$ ), where it was shown that significant predictors were emotional coping ( $\beta = .25$ ,  $p < .001$ ), subjective social support ( $\beta = -.25$ ,  $p < .001$ ), the meaning of life ( $\beta = -.24$ ,  $p < .001$ ), socio-economic status ( $\beta = -.17$ ,  $p < .05$ ), avoidance coping ( $\beta = -.16$ ,  $p < .01$ ), and anxious adult attachment ( $\beta = .14$ ,  $p < .05$ ). This study provides an evidence-based starting point for further research on behavioral models and on conceptualizing alternative models of depression in older adults. It provides insights into the predictor structure of depression in the elderly and is focused on providing recommendations for psychosocial practice.

**Keywords:** depression, older adults, behavioral model

MEANING, ROLE, AND SOURCES OF HOPE AMONG REFUGEE ADOLESCENTS  
AND YOUTH

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The majority of previous research on refugee adolescents and youth focused on psychopathology, and evidence on positive capacities such as hope remains scarce even though there are findings indicating they are important contributors to refugees' mental health. The aim of this research was to explore the meaning, role, and sources of hope among refugee adolescents and youth. A qualitative methodology was applied and 11 full semi-structured interviews were conducted with refugees from 15 to 24 years of age ( $M_{age} = 19.18$ ,  $SD_{age} = 2.82$ , 73% males), from 8 Middle Eastern and African countries. Thematic analysis and emphatic interpretation were used and four main themes emerged – Nature of hope, Hope-goal interaction, Function of hope, and Keeping hope. The results imply that, mostly, participants perceive hope as something that is learned throughout life, and not as something that is hereditary. Moreover, hope is perceived as non-linear – it can be enhanced but also decreased or lost, and sometimes it is closely tied to life events refugees are facing. A highly salient perception is that hope is closely tied to particular goals and is not general and independent. Some of the participants viewed hope as the last resort when there is nothing else that can be done and some of them view hope as the most important when referring to goals that are highly controllable. The function of hope is perceived as two-fold – on one hand, it can serve as consolation, peace, and calmness, and on the other hand, it can motivate, empower and encourage. Finally, it is noted that common sources of hope (e.g., family, friends) are not available to participants, while other refugees on the road do not have the emotional and physical capacities to lift hope. Hence, the only available sources of hope mentioned by the participants is self-reliance (e.g., proactive approach, emotional regulation) and professional support (psychologists, teachers, legal guardians). Support in lifting hope can be various: instrumental, informational, and emotional, while some qualities of support are also stressed as important in lifting hope – how we talk, our presence and continuity of support, and strictly avoiding providing fake hope to refugee adolescents and youth. Although the limitation of this study is a small sample size, it improves the overall understanding of hope in refugee adolescents and youth, its meaning, role, and sources, and is mostly discussed in terms of practical relevance in direct work.

**Keywords:** refugees, adolescents and youth, meaning of hope, role of hope, sources of hope

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## HIGH-SCHOOL STUDENTS' ATTITUDES TOWARDS CANCER: FACTOR STRUCTURE OF ATC AND RELATIONSHIP WITH COPING MECHANISMS

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Cancer diseases are pertinent topics to young people, who are confronted with the issue through personal disease, family members' diseases or media. Their attitudes towards cancer are very important because they can initiate proactive and/or preventive behaviors. However, there are few scales for examination of high-school students' attitudes towards cancer. One such scale (Attitudes towards cancer, ATC, Heuckmann & Asshoff, 2014) was recently translated in Serbian language. Main aim of this research was to examine whether factor structure of Serbian ATC fits to the original. Also, we examined relationship between ATC subscales and coping mechanisms. The sample consisted of 314 high-school students aged 16 to 18 ( $M = 17.01$ ,  $SD = 1.98$ ), 54.1% were male. We used Serbian version of ATC (subscales: Beliefs about the controllability of cancer, BCC,  $\alpha = .70$ ; Negative emotional responses towards cancer, NEC,  $\alpha = .90$ ; and Intentions for proactive behaviour towards cancer, IPBC,  $\alpha = .83$ ) and Proactive Coping Inventory for adolescents (with Proactive coping,  $\alpha = .70$ ; Reflective coping,  $\alpha = .71$ ; Strategic planning,  $\alpha = .70$ ; Preventive coping,  $\alpha = .72$ ; Seeking instrumental support,  $\alpha = .78$ ; and Seeking emotional support,  $\alpha = .75$ ). First, we performed Confirmatory factor analysis and it has shown that the factor structure of Serbian ATC fits very well ( $\chi^2_{(161)} = 1.830$ ,  $p < .001$ ,  $RMSEA = .05$ ,  $CFI = .947$ ,  $GFI = .912$ ,  $AGFI = .885$ ,  $NFI = .891$ ). The Tucker coefficient values for three factors are over 0.97. Three ATC factors proved to be uncorrelated. To examine whether coping mechanisms can predict attitudes towards cancer, we performed three linear regressions, with ATC subscales as criteria. First one showed that coping mechanisms predict about 21% of BCC ( $F_{(6, 307)} = 2.33$ ,  $p < .05$ ); significant predictor was only Preventive coping ( $\beta = .206$ ,  $t = 2.61$ ,  $p < .01$ ). Second one showed that coping mechanisms predict about 30% of NEC ( $F_{(6, 307)} = 4.83$ ,  $p < .001$ ); significant predictor was only Seeking instrumental support ( $\beta = .20$ ,  $t = 2.76$ ,  $p < .01$ ). Third one showed that coping mechanisms predict about 34% of IPBC ( $F_{(6, 307)} = 6.58$ ,  $p < .001$ ); significant predictor was only Seeking instrumental support ( $\beta = .17$ ,  $t = 2.37$ ,  $p < .05$ ). We concluded that factor structure of Serbian ATC fits to the structure of the original scale. Adolescents with higher preventive coping believe in controllability of cancer while those who seek instrumental support have more negative emotions, but act proactively.

**Keywords:** high-school students, attitudes towards cancer, coping mechanisms

THE ROLE OF PERSONALITY PSYCHOPATHOLOGY IN SENDING AND RECEIVING SEXTS AMONG YOUTH

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Sending and receiving sexually explicit content (sexting) is widespread among youth. To date, few studies have examined how personality relates to sexting behavior, focusing on dark triads. The current study (funded by HRZZ, grant number 3553) examined the relationship between pathological personality traits and sexting behavior among youth more broadly. The study was an explanatory survey with a correlational research design. A sample of 431 youth (73.55% female and 26.45% male) aged 14 to 24 years ( $M = 15.14$ ,  $SD = 1.06$ ) from Croatia and Bosnia and Herzegovina completed online questionnaires for self-assessment of sexting behavior and personality. These questionnaires included the Adolescent Sexting Scale, which assessed sending sexting to a boyfriend/girlfriend (10 items), to a person they know in person (10 items), and to a person they know only through the Internet (10 items), as well as receiving sexting behavior (3 items) on a scale from 0 (never) to 4 (several times a day), while a Personality Inventory for DSM-5-brief form was used to assess pathological personality traits (negative affect, detachment, antagonism, disinhibition, and psychoticism), with each measured trait containing 5 items giving response on a scale from 0 (very false or often false) to 3 (very true or often true). Participants were recruited via online advertisements from schools and faculties explaining the purpose of the study and completed a questionnaire during a lecture. For participants under 16 years of age, parental consent was obtained before completing the questionnaire. Participants who completed the questionnaire were entered into a drawing for 10 convertible marks gift vouchers. Using structural equation modeling, we found that antagonism was related to all three sending sexting variables, that is sending sexts to a boyfriend/girlfriend ( $\beta = .27$ ,  $p < .001$ ), to someone they know in person ( $\beta = .24$ ,  $p < .001$ ), and/or to someone they know only through the Internet ( $\beta = .23$ ,  $p < .001$ ). Detachment, in turn, was related to sending sexting to a boyfriend/girlfriend ( $\beta = -.15$ ,  $p < .01$ ) and sending sexting to someone they know personally ( $\beta = -.16$ ,  $p < .01$ ), as well as receiving sexts ( $\beta = -.18$ ,  $p < .001$ ). Our findings support the association of maladaptive personality traits, antagonism and

detachment, with sexting, which has implications for the assessment and treatment of these new forms of digital behavior.

**Keywords:** pathological personality traits, sexting, sending sexts, receiving sexts, youth

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THE RELATIONS BETWEEN STRESSOGENIC EXPERIENCE, PERSONALITY  
STRUCTURE AND CURRENT EMOTIONAL STATUS IN PATIENTS HOSPITALIZED  
FOR COVID-19

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The studies indicate correlation between COVID-19 related stress and negative indicators of mental health (Zhang et al., 2021). It is already known that how people react in stressful situations is strongly correlated with basic personality structure (Lauterbach & Vrana, 2001). Therefore, the aim of this research is to investigate the relation between stressogenic experience and current emotional states of depression, anxiety and distress of the hospitalized COVID-19 patients, taking into account basic personality structure (Honesty, Emotionality, Extraversion, Agreeableness, Conscientiousness Openness and Disintegration) as a moderating factor. Stressogenic experience were measured by general measurement of the clinical manifestation severity (from asymptomatic infection to critical illness), individual medical parameter values (body temperature, CRP, D-dimer, oxygen saturation, radiological image of lungs, oxygen therapy), subjective estimation of the clinical manifestation severity, and the additional stressogenic factors. The Depression Anxiety Stress Scales-DASS-21 (Henry & Crawford, 2005; Lovibond & Lovibond, 1995), Brief HEXACO Inventory–BHI (de Vries, 2013), and Personality Inventory DELTA-10 (Knežević et al., 2017) were filled in by 267 COVID-19 patients, aged 18 to 82 years, out of which 65% were males and 35% females. A number of patients manifested moderate level of depressiveness (5.4%), anxiety (17.6%) and stress (2.6%), requiring certain level of mental health support. The variables of patient's medical status, radiology image of the lungs ( $r = .149, p < .01$ ) and severity of clinical manifestation ( $r = .120, p < .01$ ) correlated with anxiety symptoms, but not with depressive symptoms and distress. Disintegration moderated the relation between the physicians' feedback to patients on their medical status and anxiety, the relation between the information about radiological image of the lungs and anxiety ( $R$ -square increase due to interaction(s): .02;  $F_{(1,252)} = 5.81; p = .017$ ) and the relation between the information of the severity of clinical manifestation and anxiety ( $R$ -square increase due to interaction(s): .02;  $F_{(1,252)} = 6.54; p = .011$ ). Information about the medical status of the hospitalized COVID-19 patients, radiology image of the lungs and severity of clinical manifestation, increases their level of anxiety. Disintegration of the patients can increase or decrease this influence. Such findings could be significant in the approach to patients during their curing.

**Keywords:** COVID-19, hospitalization, stress, mental health, medical status

## IS AFFECTIVE ATTACHMENT A MEDIATOR BETWEEN SELF-ESTEEM AND LONELINESS AMONG STUDENTS IN SERBIA?

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Loneliness is both a sociological and a health problem, deserving thorough consideration of related factors. In this work, we examined whether affective attachment is a mediator between self-esteem and loneliness. The sample comprised 111 students of the Faculty of Special Education and Rehabilitation and the Faculty of Philosophy University of Belgrade [ $N_{\text{female}} = 84$  (75.7%)], aged from 19 to 30 ( $M = 22.95$ ;  $SD = 2.28$ ). They voluntarily responded online to the following questionnaires: sociodemographic data (gender, place of residence, level of study, age, and relationship), the UCLA 20 scale, the UPIPAV scale, and the Beck self-esteem scale. The UCLA 20 scale examines shyness and subjective feelings of isolation and not belonging. The UPIPAV is a scale of affective attachment that assesses the quality of attachment to others, and it classifies participants into four categories; rejecting, nurturing, fearful and dual form. Beck's self-esteem scale assesses the level of feeling secure in oneself. The preliminary analysis included ANOVA, correlation, and regression analysis. A one-factor ANOVA with affective attachment as a factor and loneliness as a dependent variable showed that subjects with different affective attachment styles differ statistically significantly in loneliness and, more specifically, that subjects with a rejecting attachment style have a higher level of loneliness [ $F_{(3,107)} = 5.426$ ,  $p < .01$ ]. In addition, a negative correlation was found between self-esteem and loneliness ( $r = -.331$ ,  $p < .001$ ). The results of a multiple regression model [ $R = .500$ ;  $R^2 = .250$ ,  $F_{(4,106)} = 8.837$ ,  $p < .001$ ] with loneliness as a criterion, and self-esteem and type of affective attachment as the predictors, indicate that loneliness can be predicted by the level of self-esteem ( $\beta = -.358$ ,  $t = -4.085$ ,  $p < .001$ ) and dismissive type of affective attachment ( $\beta = .362$ ,  $t = 4.369$ ,  $p < .001$ ). To test the role of affective attachment on the relationship between self-esteem and loneliness, a mediation model was tested. A direct effect of self-esteem ( $\beta = -0.680$ ,  $z = -3.639$ ,  $p < .001$ ) on loneliness was observed, but after including affective attachment in the model this effect becomes insignificant (indirect effect:  $\beta = -0.050$ ,  $z = -0.752$ ,  $p = .452$ , total effect:  $\beta = -0.729$ ,  $z = -3.699$ ,  $p < .001$ ), which suggest to the full mediation model. These findings' implications are discussed considering future research and the potential of interventions targeting loneliness from an attachment perspective.

**Keywords:** loneliness, attachment style, self-esteem, mediation analysis

*PSYCHOLOGY OF ART*

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SENSE AND SENSIBILITY OF KRKS AND MOVA - EFFECT OF EMOTION ON  
NAMING ABSTRACT SHAPES

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The results of earlier research showed that shape and emotion have an equal effect on the naming of an object with the pseudowords krks and mova. Respondents named sharp emoticons depicting anger with krks, and round emoticons depicting happiness with mova. Furthermore, it was shown that the preference for selecting pseudowords is clear with congruent (angular/angry and round/happiness), while the preference disappears with incongruent (angular/happiness and round/anger) stimuli. It remains unclear whether emotions have a mediating role or a direct effect on naming objects with pseudowords. The aim of this research was to examine whether the naming of abstract shapes with pseudowords differs if a certain shape is preceded by a facial expression of anger or happiness. We used a priming paradigm, with human facial expressions (anger and happiness) as primes and pairs of angular and round shapes as targets. The pairs of pseudowords we used for naming were krks/mova and kiki/bouba. The respondents were students ( $N = 34$ ), both genders (32 female), aged 18 to 22. We measured a proportion of so-called round words (bouba and mova) and a reaction time for naming each shape. For the proportion of round names, a two-factor analysis of variance for repeated measures showed that the effects of emotion and interaction were not significant, but the shape effect is at the borderline significance ( $F(1,34) = 3.629, p = .065, \eta^2 = .096$ ). Furthermore, after removing three outliers we got a significant effect of shape ( $F(1, 31) = 11.266, p < .002, \eta^2 = .267$ ), but, again there was no interaction of shape and emotion. Also, we obtained a shape effect for the krks/mova pseudowords ( $F(1, 34) = 6.961, p = .012, \eta^2 = .170$ ), but the shape effect for the kiki/bouba pair of pseudowords was not significant. Reaction time did not show any significant effects. Therefore, in this research, we confirmed the preference of choosing pseudowords krks for angular and mova for naming round shape, but, we did not get the effect of emotion or interaction of emotion and shape. These results indicate that emotions do not play a mediating role during the process of naming abstract angular and round shapes with pseudowords.

**Keywords:** sound symbolism, krks/mova, emotion, facial expression, abstract shapes



AESTHETIC EXPERIENCE OF ARTWORKS PRESENTED IN A LABORATORY  
CONTEXT AND IN A 3D NAVIGABLE GALLERY

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Recent studies of art experience suggested that art-related contexts have a positive impact on aesthetic and affective experiences of artworks. In the present study, we compared the aesthetic and affective experiences of an art exhibition presented in two contexts that share the same display medium (computer screen), but differ in terms of the presence of art-related context: a 3D navigable gallery (VR viewing room) and a classical laboratory context. Thirty-six participants viewed the exhibition, which consisted of the same thirteen paintings presented in a 3D gallery and in a laboratory context. Each participant was randomly assigned to one of the two groups upon arrival to the testing site. Half of the participants first viewed the exhibition in the 3D gallery, and then in the laboratory context, and the other half viewed exhibitions in opposite order of contexts. Participants were asked to rate each painting, as well as the entire exhibition experience in different contexts, in terms of the intensity of their aesthetic experience (via liking scale) and affective experience (using scales that measured valence, arousal and cognitive evaluation). Participants also answered a set of open-ended questions relating to their experience of the exhibition in different contexts. The results showed significant differences in the ratings of the experience of the exhibition in the 3D gallery and in the laboratory context. Both the aesthetic ( $Z = -3.489$ ,  $p < .01$ ,  $r = -.581$ ) and affective experience: pleasantness ( $Z = -2.444$ ,  $p < .05$ ,  $r = -.407$ ), impressiveness ( $Z = -2.410$ ,  $p < .05$ ,  $r = -.402$ ), interestingness ( $Z = -2.862$ ,  $p < .01$ ,  $r = -.447$ ), were more intense in the 3D gallery compared to laboratory context. Experience of individual artworks presented in two contexts showed no significant differences. Qualitative analysis further indicated that the experience of exhibition in the 3D gallery was perceived as being more interesting and powerful, which supported the results obtained by quantitative analysis. The findings of this study confirmed that presenting art in art-related contexts such as VR galleries / 3D viewing rooms significantly contributes to the intensity of our aesthetic and affective experiences compared to the ordinary display of artworks on a computer screen.

**Keywords:** aesthetic experience, affective experience, liking, VR, 3D gallery

FACTOR STRUCTURE OF THE MEANING ATTRIBUTED TO DANCE: PERSPECTIVE  
OF NON-DANCERS

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This paper aims at exploring which meaning non-dancers attribute to dance. There were 180 students aged between 17 and 24 years ( $M = 19.31$ ,  $SD = 1.14$ , 72.2 % woman) from Novi Sad School of Business participating in this study. Non-dancers assessed 13 items called indicators of meaning, given in the form of sentences: "Dance for me is: 1 – A pleasure; 2 – An escape from reality; 3 – An effort; 4 – An enjoyment; 5 – A frustration; 6 – A way of returning to myself; 7 – An ideal way of expressing myself; 8 - Creativity; 9 - Stress relief; 10 - A way to be in a physical good form; 11 – A way of expressing my sexuality; 12 – A way of seduction; 13 - A form of entertainment". They made their assessments on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree). To explore the factor structure of non-dancers' assessments of the indicators of meaning which they attribute to dance, an exploratory factor analysis (EFA) was conducted. In order to decide how many factors would be kept, a parallel analysis using syntax was also performed. Based on a principal axis factoring (PAF) procedure with Varimax rotation for 13 indicators three extracted factors were kept as they gave the most interpretable solution. These three factors have a common explained variance of 51.15% and they are: Creative Self-expression (a way of returning to myself, creativity, an ideal way of expressing myself, stress relief), Body attractiveness (a way of seduction, a way of expressing my sexuality) and Effort (an effort and a frustration). Dimensions of attributed meaning to dance obtained by non-dancers in this study are compared with dimensions of attributed meaning to dance obtained by dancers investigated in the author's previous study. It is concluded that the meaning attributed to dance by those who do not dance comparing to dancers is very similar. This result is discussed in the context of the universality of dance.

**Keywords:** non-dancers, attribution of meaning to dance, exploratory factor analysis, dimensions, creative self expression, body attractiveness, effort

THE DIFFERENCES IN THE ATRIBUTTION OF THE MEANING TO DANCE  
BETWEEN DANCERS AND NON-DANCERS

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This paper aims at exploring the differences between dancers and non-dancers in the meaning that they attribute to dance. There were 278 participants in this study aged between 17 and 57 years ( $M = 24.74$ ;  $SD = 9.88$ ; 77.3% woman). The group of non-dancers consisted of 180 students aged between 17 and 24 years ( $M = 19.31$ ,  $SD = 1.14$ , 72.2 % woman) from Novi Sad School of Business. The second group included 98 dancers aged between 17 and 57 years ( $M = 34.71$ ,  $SD = 11.21$  ; 86.7% woman). Both groups had the same task to assess 13 items called indicators of meaning, given in the form of sentences: "Dance for me is: 1 – A pleasure; 2 – An escape from reality; 3 – An effort; 4 – An enjoyment; 5 – A frustration; 6 – A way of returning to myself; 7 – An ideal way of expressing myself; 8 - Creativity; 9 - Stress relief; 10 - A way to be in a physical good form; 11 – A way of expressing my sexuality; 12 – A way of seduction; 13 - A form of entertainment". Participants made their assessments on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree). Results have shown that dancers attribute to dance ten indicators of the meaning more strongly comparing to non-dancers. These are pleasure ( $t(276) = -7.981$ ,  $p < .001$ ), an enjoyment ( $t(276) = -9.784$ ,  $p < .001$ ), an escape from reality ( $t(276) = -2.431$ ,  $p < .016$ ), a way of returning to myself ( $t(276) = -8.983$ ,  $p < .001$ ), an ideal way of expressing myself ( $t(276) = -10.886$ ,  $p < .001$ ), creativity ( $t(276) = -5.171$ ,  $p < .001$ ), stress relief ( $t(276) = -6.229$ ,  $p < .001$ ), a way to be in a physical good form ( $t(276) = -5.917$ ,  $p < .001$ ), a way of seduction ( $t(276) = -2.828$ ,  $p < .005$ ) and a way of expressing my sexuality ( $t(276) = -9.993$ ,  $p < .001$ ). Results have also shown that people who do not have experience in dance attribute effort as an indicator of the meaning of dance more strongly comparing to dancers ( $t(276) = 2.183$ ,  $p < .030$ ). It is concluded that experience in dance influence positively on the attribution of meaning to dance.

**Keywords:** experience in dance, dancers, non-dancers, attribution of meaning to dance

CHANGE OF MOOD AS THE MEDIATOR IN AESTHETIC JUDGMENTS

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One often hears the opinion that the value of a work of art rests on the strength of the emotions it evokes in the audience. The aim of our research was to explore mediating role of change of positive and negative moods on aesthetic appreciation. The sample comprised of 74 students (69 females,  $M = 19.9$  years,  $SD = 3.35$ ). The participants filled in the questionnaire Magical thinking (MT), one of lower-level dimensions within personality trait named Disintegration. Then, in the next 10 days, they received a link to an online questionnaire twice a day via the Viber application. At the beginning, this questionnaire included an assessment of current positive and negative mood, then observation of a painting with a pleasant or unpleasant subject, and then a re-assessment of current mood, as well as an aesthetic judgement of the observed painting. The participants performed all ratings using seven-point Likert-type scales. After observing pleasant paintings there is an increase in positive ( $M_{pos} = 0.29$ ,  $t(73) = 6.39$ ,  $d = .74$ ), and decrease in negative mood ( $M_{neg} = -0.22$ ,  $t(73) = 4.60$ ,  $d = .53$ ), while after observing unpleasant paintings the situation is reversed ( $M_{pos} = -0.57$ ,  $t(73) = 8.22$ ,  $d = .96$  and  $M_{neg} = 0.58$ ,  $t(73) = 7.52$ ,  $d = .87$ ; all  $ps < .001$ ). Artwork type influences aesthetic judgments: pleasant paintings are 2.82 units more likeable, 2.67 units less touching and 0.60 units less emotionally influencing comparing to negative (all  $p < .001$ ). MT moderates total and direct effects of painting type on likeability and touchingness (likeable: *total*  $b = 0.55$ ,  $t(72) = 2.43$ ,  $p = .02$ , *direct*  $b = 0.55$ ,  $t(70) = 2.47$ ,  $p = .02$ ; touching: *total*  $b = -0.49$ ,  $t(72) = -2.46$ ,  $p = .02$ ; *direct*:  $b = -0.44$ ,  $t(70) = -2.33$ ,  $p = .02$ ), but not on emotional influence. Finally, conditional indirect effect of artworks type on aesthetic judgments through change in moods is weak for likeable (for positive mood change:  $b = 0.81$ ,  $SE = .27$ ,  $CI [0.29, 1.37]$ , for negative mood change:  $b = -0.48$ ,  $SE = .21$ ,  $CI [-0.91, -0.09]$ ) and for touching judgments (only for positive mood change:  $b = -0.66$ ,  $SE = .26$ ,  $CI [-1.21, -0.21]$ ), but not significant for emotional influence. Artworks strongly influence positive and negative mood change, and the influence on aesthetic judgments depends on aesthetic experience domain. The results suggest that the influence of artworks via mood change on aesthetic judgments is weaker than expected.

**Keywords:** Aesthetic judgment, mood, magical thinking, conditional process analysis

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UMEĆE OSEĆANJA U META SVETU: MANIFESTACIJA SOCIO-EMOCIONALNIH  
KOMPETENCI ADOLESCENATA NA DRUŠTVENOJ MREŽI INSTAGRAM

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*Socio-emocionalne kompetencije (SE) su prepoznate u literaturi kao značajni činioci uspeha u obrazovnom kontekstu, ali i kasnijem životu, kao i u negovanju mentalnog zdravlja i opšteg blagostanja. CASEL konceptualni okvir, na koji se oslanjam u ovom radu, izdvaja pet ključnih (SE) kompetencija: svest o sebi, upravljanje sobom, socijalna svesnost, veštine formiranja i održavanja odnosa i odgovorno donošenje odluka, koje su značajne za razvoj pojedinca, relacija sa drugima, ali i odgovorno učešće u društvu. Sve veća prisutnost digitalnih tehnologija u svakodnevici ljudi, kao i premeštanje životnih aktivnosti u onlajn kontekst, otvara pitanje načina na koji se SE kompetencije razvijaju i ispoljavaju u onlajn naspram oflajn konteksta. Ovo pitanje je naročito relevantno u periodu adolescencije zbog razvojnog potencijala ovog perioda za razvoj SE kompetencija, ali i zbog zastupljenosti aktivnosti u onlajn kontekstu u svakodnevnom funkcionisanju adolescenata. Prema brojnim istraživanjima, adolescenti su u najvećoj meri prisutni u onlajn prostoru kroz učešće u društvenim mrežama, za koje je utvrđeno da mogu imati efekte na važne aspekte života adolescenata, poput razvoja identiteta i mentalno zdravlje. Stoga, kroz ovo istraživanje težim da doprinesem razumevanju načina na koji adolescenti različitih nivoa razvijenosti SE kompetencija koriste SE kompetencije na društvenoj mreži Instagram, društvenoj mreži koja je najzastupljenija među mladima, kao i mapiranju razlika koje postoje u ispoljavanju ovih kompetencija u onlajn i oflajn kontekstu. U istraživanju sam primenila mešoviti metodski dizajn. U prvoj fazi istraživanja, 107 adolescenata popunilo je onlajn prevedeni i adaptirani upitnik za samoprocenu SE kompetencija u oflajn okruženju („Social-Emotional Learning Scale“,  $\alpha = 0,9$ ). Na osnovu rezultata na upitniku, izdvojila sam deset učesnika i učesnica koji su ostvarili najniže (ispitanici NSEK) i najviše skorove (ispitanici VSEK) na zadatoj skali, i pozvala ih da učestvuju u drugom delu istraživanja. Drugi deo istraživanja je obuhvatio polustrukturirane intervju sa odabranim učesnicima, oslanjajući se na vodič razvijen za potrebe ovog istraživanja. Analizi se pristupilo iz fenomenološke epistemološke pozicije, metodom interpretativne fenomenološke analize. Nalazi istraživanja svedoče o važnosti Instagrama u svakodnevnom životu obe grupe mladih, pri čemu učesnici opisuju višestruke uloge koje Instagram ima za njih - sazajnu, socijalnu i ulogu rasonode. Nalazi sugerišu na značajne razlike između manifestovanja SE kompetencija u onlajn naspram oflajn prostora, kao i na dodatne razlike između manifestovanja kod ispitanika sa procenjenim različitim nivoima razvijenosti SE kompetencija. Specifičnosti manifestovanja SE kompetencija u onlajn kontekstu i pokazatelj njihove razvijenosti uglavnom su se odražavali kroz doživljaje uspostavljanja kontrole nad načinom upotrebe društvene mreže i nad sopstvenim ponašanjem u okviru socijalnih interakcija u onlajn kontekstu, kao i kroz doživljaje o pronalaženju načina za primenom znanja iz oflajn sveta u onlajn kontekstu, te su u ovim aspektima uočene najznačajnije razlike u doživljajima ispitanika VSEK i NSEK.*

Uočene sličnosti između ispitanika VSEK i NSEK odnosile su se na doživljaje onlajn prostora kao manje podsticajnog za doživljavanje i iskazivanje emocija, kao i kroz poteškoće prepoznavanja onlajn prostora kao zasebnog društvenog sistema sa sopstvenim pravilima. Nalazi istraživanja ukazuju da postoji potreba za daljim istraživanjem uloge koju SE kompetencije imaju u onlajn kontekstu, odnosno u načinu na koji se u onlajn kontekstu grade identiteti i odnosi, upravlja emocijama, prepoznaju i preispituju norme, i donose odluke. Praktične preporuke se odnose na razvoj obrazovnih praksi u koje mogu podržati razvoj SE kompetencija mladih i omogućiti im uspostavljanje kontrole nad sopstvenim iskustvom na društvenim mrežama.

**Ključne reči:** socio-emocionalne kompetencije, adolescencija, Instagram, društvene mreže, onlajn kontekst

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## UTICAJ STRANOG JEZIKA NA SUĐENJE O VERBALIZMIMA

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Glavni cilj ovog istraživanja je bio eksperimentalno ispitati efekat stranog jezika na procenu dubokoumnosti verbalizama. U istraživanju su učestvovali ispitanici čiji je maternji jezik srpski, a strani (visoko fluentan) jezik engleski, koji su procenjivali dubokoumnost verbalizama, ali i svakodnevnih iskaza različite emocionalne valence. Glavna pitanja ovog istraživanja su bila: 1. Postoji li efekat stranog jezika na proces suđenja o dubokoumnosti iskaza kod srpsko-engleskih bilingvala? i 2. Može li efekat stranog jezika u tom slučaju biti pripisan emocionalnoj valenci, kao što su predložili pojedini istraživači? Pored glavne studije su, u cilju konstruisanja materijala, sprovedena dva pilot istraživanja. U okviru prve studije preuzete su reči sa ranije normativne studije na engleskom jeziku, koje su potom prevedene i procenjene od strane govornika srpskog jezika kako bi se utvrdila ujednačenost normi i odredile reči koje su korišćene za kreiranje verbalizama i svakodnevnih iskaza na engleskom i na srpskom jeziku različite emocionalne valence. Nakon kreiranja iskaza, u toku druge pilot studije, studenti psihologije su procenjivali verbalizme i svakodnevne iskaze po emocionalnoj valenci i zamislivosti, kako bi se ovog puta utvrdile norme celih iskaza. Rezultati glavne studije ukazuju da nema efekta stranog jezika na procenu dubokoumnosti verbalizama, dok, sa druge strane, nalazi iz druge pilot studije sugerišu da se ovaj efekat ispoljava na procenu zamislivosti verbalizama i svakodnevnih iskaza, u smeru većih procena zamislivosti iskaza na stranom jeziku. Emocionalna valenca iskaza je imala značajan uticaj na procenu dubokoumnosti iskaza, što ukazuje na veću podložnost prihvatanju dubokoumnosti iskaza ukoliko su oni emotivno nabijeniji.

**Ključne reči:** efekat stranog jezika, verbalizmi, emocionalna valenca, emocionalna distanca, model dualnih procesa, zamislivost

DA LI JE POVEZANOST IZMEĐU CRTA MRAČNE TETRADE LIČNOSTI I  
LJUBOMORE POSREDOVANA STILOVIMA AFEKTIVNE VEZANOSTI?

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Istraživanja ljubomora su relativno retka u literaturi, iako predstavlja značajan psihološki fenomen, između ostalog u domenu partnerskog nasilja. Prethodna literatura pokazala je da je ljubomora na različite načine povezana sa brojnim drugim psihološkim karakteristikama, uključujući stilove afektivne vezanosti i mračne crte ličnosti. Ipak, prethodne studije nisu se bavile međusobnom interakcijom ove dve grupe fenomena u predviđanju ljubomora. Stoga, u ovoj studiji ispitan je efekat mračnih crta ličnosti, operacionalizovanih kroz model mračne tetrade (makijavelizam, narcizam, psihopatija, sadizam) na različite oblike ljubomora (generalna, seksualna i emotivna), a pod posredstvom dve dimenzije afektivne vezanosti (anksioznost i izbegavanje). Kako bi se odgovorilo na ovo istraživačko pitanje, sprovedena je upitnička studija na 352 ispitanika. Rezultati su pokazali da je anksioznost povezana sa ljubomorom pozitivno, a izbegavanje pretežno negativno. Kada su u pitanju crte mračne tetrade, narcizam je izdvojen kao najrelevantniji prediktor svih oblika ljubomora. U medijacionoj analizi pokazano je da se ova veza ostvaruje posredstvom anksioznosti. Makijavelizam i psihopatija pokazani su kao prediktori samo specifičnih oblika ljubomora, što nije bilo posredovano crtama afektivne vezanosti. Odnos sadizma i ljubomora pokazan je kao kompleksan, odnosno različit u zavisnosti od vršene analize, tako da su ponuđene interpretacije uslovne i zahtevaju dodatna istraživanja. U ovoj studiji ukazano je na centralnu ulogu narcizma u osećanjima ljubomora u romantičnim vezama, kao i potencijalnim mehanizmima putem kojih se mračne crte oslikavaju na ljubomoru.

**Ključne reči:** mračna trijada, mračna tetrada, makijavelizam, psihopatija, narcizam, sadizam, ljubomora, afektivna vezanost, izbegavanje, anksioznost.

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INSTITUCIONALNO POVERENJE KAO MODERATOR U RELACIJI IZMEĐU  
POVERENJA U NAUKU I STAVOVA MLADIH PREMA VAKCINACIJI PROTIV  
COVID-19

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**Mentorka:** dr MILICA LAZIĆ

Srbija je treća zemlja u Evropi koja je počela sa vakcinacijom svojih građana protiv COVID-19. Manje od mesec dana kasnije počela je masovna imunizacija građana vakcinama jednog od četiri proizvođača: Pfizer-BioNTech, Sinopharm, Sputnik V i Oksford/AstraZeneka. Od tog trenutka do sredine septembra 2021. godine, u Srbiji je vakcinisano 43,64% stanovništva.



Prema zvaničnim podacima Instituta za javno zdravlje Srbije, objavljenim krajem jula 2021. godine, najmanji procenat (15%) vakcinisanih zabeležen je kod mladih između 18 i 24 godine, što se ubrzo pokazalo da će imati snažnih implikacija na proces zaustavljanja pandemije. Brojna istraživanja ističu poverenje u nauku kao važnu determinantu pozitivnih stavova prema COVID-19 vakcinaciji, te je povezuju sa većom namerom ljudi da se vakcinišu. Međutim, postoje nalazi koji sugerišu da značajan faktor koji utiče na poverenje u nauku predstavlja doživljaj javnosti o nacionalnoj vlasti, koja je u uslovima COVID-19 pandemije, u mnogim regionima problematizovala ideju da nauka postoji izvan političkog konteksta. Samim tim, postavljamo pitanje da li je odnos poverenja u (zvaničnu medicinsku) nauku i stavove prema vakcinacijama protiv COVID-19 značajno izmenjen u uslovima niskog ili visokog institucionalnog poverenja. Drugim rečima, istraživanje je imalo za cilj da ispita da li institucionalno poverenje predstavlja faktor vulnerabilnosti u navedenom odnosu. Sprovedeno onlajn istraživanje je deo pilot studije koja se sprovodi u okviru projekta „(Ne)poverenje u vakcine protiv COVID-19 kod adolescenata: determinante i implikacije za javno zdravlje“, a koji je finansiran od strane Pokrajinskog sekretarijata za obrazovanje i naučnoistraživačku delatnost AP Vojvodine. Prilikom aktuelnog istraživanja korišćen je korelaciono-regresioni kros-sekcioni nacrt. Uzorak su činili 311 mladih osoba na teritoriji Republike Srbije, raspona starosti od 15 do 25 godina ( $M = 21.19$ ,  $SD = 2.546$ ), od čega je ženskih ispitanika 220 (70.7%), a muških 91 (29.3%). Prediktorske varijable su činile jednoajtemske mere poverenja u nauku i poverenja u zvaničnu savremenu medicinu, zatim moderatorska varijabla se sastojala od dve komponente institucionalnog poverenja (poverenja u vlast i poverenja u zdravstveni sistem), dok su kriterijum varijabla bili stavovi prema vakcinaciji protiv COVID-19 (Lueck & Spiers, 2020). Od dve postavljene hipoteze, druga je delimično potvrđena (H2b). Naime, rezultati pokazuju da u uslovima visokog poverenja u zvaničnu savremenu medicinu, nepoverenje u zdravstveni sistem predstavlja faktor vulnerabilnosti na stavove mladih prema vakcinaciji protiv COVID-19. Drugim rečima, mladi koji imaju visoko poverenje u medicinu imaće značajno negativnije stavove prema vakcinaciji u uslovima nižeg poverenja u zdravstveni sistem u odnosu na mlade koji imaju više poverenje u zdravstveni sistem. Ovaj nalaz nam govori da je važno imati na umu da mladi koji su kroz svoju socijalizaciju i edukaciju formirali epistemičko poverenje u nauku, u uslovima velikih kriznih situacija kao što je pandemija, imaju tendenciju da evaluiraju i kontekst u kome se sprovede mere javne zdravstvene zaštite. Stoga, u slučaju da donesu sud o postojanju sumnjivih namera institucionalnih i socijalnih instanci uključenih u proces sprečavanja krizne situacije, njihovi stavovi o preventivnim merama javne zdravstvene zaštite će biti kompromitovani.

**Ključne reči:** poverenje u nauku, zvanična savremena medicina, stavovi prema vakcinaciji protiv COVID-19, institucionalno poverenje, poverenje u zdravstveni sistem, mladi

ADAPTACIJA I VALIDACIJA SKALE PORODIČNOG UTICAJA NA IZBOR  
ZANIMANJA I RAZVOJ KARIJERE (FAMILY INFLUENCE SCALE) NA UZORKU  
STUDENATA IZ SRBIJE

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**Mentorka:** dr IVANA PEDOVIĆ

U našem, BHCS kulturološkom području (bosansko-hrvatsko-crnogorsko-srpsko govorno područje), ne postoji instrument za merenje toga u kojoj meri i na koje načine porodica može da ostvari uticaj na odabir i razvoj nečije karijere. Stoga je opšti cilj ovog istraživanja bio adaptacija i ispitivanje merne invarijantnosti (funkcionalne ekvivalentnosti) adaptirane verzije Skale porodičnog uticaja na izbor zanimanja i razvoj karijere u odnosu na originalnu verziju skale (Family Influence Scale). Uzorak ovog istraživanja je bio prigodan i činilo ga je 204 studenta osnovnih i master akademskih studija iz Srbije. Konstruktna validnost i ispitivanje ekvivalentnosti faktorske strukture adaptirane verzije Skale porodičnog uticaja na izbor zanimanja i razvoj karijere sa strukturom originalne verzije skale su proveravani primenom analize glavnih komponentata, paralelne analize i konfirmatorne faktorske analize. Rezultati ovih analiza uglavnom idu u prilog četvorofaktorskom rešenju, što ukazuje na jednak broj dimenzija koji se izdvojio u latentnom prostoru originalne i ciljne verzije ove skale. Rezultati provere konvergentne validnosti preko računanja korelacija mera dobijenim na Skali porodičnog uticaja na izbor zanimanja i razvoj karijere sa merama dobijenim na Skali podrške, uplitanja i nedostatka angažovanja uglavnom idu u prilog konvergentnoj validnosti. Sprovedena je i analiza nomološke mreže sa ciljem ispitivanja ekvivalentnosti nomološke mreže adaptirane verzije ove skale sa nomološkom mrežom originalne verzije (računanjem korelacija mera dobijenim na Skali porodičnog uticaja na odabir zanimanja i razvoj karijere i merama samoeфикаsnosti u karijernom odlučivanju, porodične afektivne vezanosti, individualizma-kolektivizma i zadovoljstva životom) i ovi rezultati uglavnom idu u prilog ekvivalentnosti nomološke mreže dveju verzija skale. Studija interne strukture je sprovedena ispitivanjem međusobnih veza mera koje daje ova skala i ovi rezultati uglavnom idu u prilog interne validnosti skale. Skala je pokazala i uglavnom zadovoljavajuću pouzdanost interne konzistencije ( $\alpha$  se kretala od .650 do .837, a  $\omega$  od .669 do .838). Na osnovu dobijenih rezultata, može se reći da se, uprkos nekim ograničenjima, ova skala može koristiti kao mera za ispitivanje i istraživanje uticaja porodice na izbor zanimanja i razvoj karijere kod studenata.

**Ključne reči:** uticaj porodice, izbor zanimanja, razvoj karijere, adaptacija, validacija

SLIČNOST SENZOMOTORNOG ISKUSTVA KAO MERA POVEZANOSTI ZNAČENJA  
VIŠEZNAČNIH REČI

**Sara Anđelić**

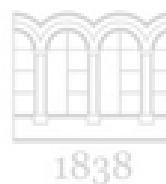
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Prema savremenim modelima mentalna reprezentacija reči je distribuirana u obrascu aktivacije osnovnih jedinica koje reprezentuju njene različite odlike. U slučaju različitih značenja višeznačnih reči koja su povezana (polisemičnih reči) obrasci aktivacije su slični, dok su kod nepovezanih značenja višeznačnih reči (homonima) obrasci potpuno različiti. Dok modeli distribuirane obrade ovako gledaju na mentalnu reprezentaciju, modeli utelovljene kognicije vide senzomotorno iskustvo sa pojmom kao ono što čini reprezentaciju pojma. Cilj ovog istraživanja je bio razmotriti da li se ove dve grupe modela mogu dovesti u vezu, razmatranjem senzomotornih informacija kao osnovnih jedinica čiji obrasci aktivacije nose podatke o značenju. Problemu se prišlo iz ugla višeznačnosti te su prikupljene senzomotorne norme (procene mogućnosti senzomotornog iskustva) za pojedinačna značenja višeznačnih reči na dvanaest senzomotornih skala. U cilju odgovaranja na istraživačko pitanje, norme su validirane na tri načina. Najpre je testirana razlika u sličnosti senzomotornih profila između povezanih (polisemičnih) značenja i između nepovezanih značenja (homonima). Zabeležena je očekivana razlika: senzomotorni profili sličniji kod povezanih značenja (polisemičnih). Norme su zatim validirane i prikupljanjem procena semantičke sličnosti parova značenja, mere za koju se pokazalo da je u pozitivnoj vezi sa senzomotorom sličnošću značenja, što je bilo u skladu sa hipotezama. Međutim, očekivana veza između ubrzavanja obrade kod reči sa sličnijim značenjima, nije zabeležena ni u slučaju semantičke ni u slučaju senzomotorne sličnosti značenja reči. Globalno, ovi rezultati sugerišu da postoji delimično mapiranje kontinuuma semantičke sličnosti (stepena deljenosti osnovnih jedinica) na kontinuum senzomotorne sličnosti, te da ima smila senzomotorne informacije razmatrati kao posebnu vrstu osnovnih jedinica koje nose informaciju o značenju. Uprkos ograničenjima istraživanja navedenih u radu, ono je produkovalo korisne resurse za buduća istraživanja (senzomotorne norme, procene semantičke sličnosti), korisne proceduralne novine i uvide, ali i rasvetljavanje veze između dve grupe modela koje na različit, ali, pokazuje se, kompatibilan način, pokušavaju da daju odgovor na isto pitanje: kako je mentalno reprezentovano značenje reči.

**Ključne reči:** višeznačnost reči, modeli distribucionog pristupa, modeli utelovljene kognicije, senzomotorne norme, senzomotorna distanca, semantička sličnost

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