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SPECIAL SECTION

**12<sup>th</sup> ALPS ADRIA PSYCHOLOGY CONFERENCE**

September 29<sup>th</sup> - October 1<sup>st</sup>, 2016  
University of Rijeka  
Croatia



## *Preface to the Special Section*

Dear Colleagues,

this section of the Review of Psychology contains abstracts of presentations from the 12<sup>th</sup> Alps-Adria Psychology Conference (AAPC16) that will be held in Rijeka from September 29<sup>th</sup> to October 1<sup>st</sup> 2016 under the auspices of the Faculty of Humanities and Social Sciences and the University of Rijeka. Alps-Adria Psychology Conference is a biennial event taking place at one of the universities of the Alps-Adria community. The aim of the conference is to bring together researchers from the region to communicate their latest work and to foster international cooperation. The Conference is particularly devoted to the promotion of psychological research among undergraduate and graduate students who are encouraged to participate and to present their best work.

The conference will consist of 135 presentations in total including 7 plenary talks, one symposium, regular talks, and poster presentations. The conference will encompass a broad range of topics and methodologies from scientific and applied psychology. There will be separate sessions on sensation and perception, art and aesthetics, cognitive psychology, psychometrics, personality and individual differences, social psychology, developmental psychology, educational psychology, organizational psychology, political and evolutionary psychology, clinical and applied psychology. Professor Sergio C. Masin from the University of Padova, Professor Sara Bigazzi from the University of Pécs, Professor Katja Corcoran from the University of Graz, and Professor Valentin Bucik from the University of Ljubljana will deliver plenary talks as part of the main program. In honour of Professor Gottfried Süssenbacher, a prize for best student presentation in evolutionary psychology will be awarded.

In addition to the main program, the AAPC16 will offer two satellite events:

### Symposium on Metacognition

Metacognition is recognised as an important component of successful learning. Recently, it has become the major focus of research in cognitive and educational psychology.

The reason for this growing interest is an insight that learners are not just passive receivers of information, instead they actively choose what, when and how to learn. Active involvement is primarily dependent on the monitoring and control of the cognitive processes during learning, that is, metacognition. Professor Rakefet Ackerman from the Technion-Israel Institute of Technology, and Professor Anastasia Efklides from the Aristotle University of Thessaloniki will present the latest theoretical and empirical developments in this field of study.

### 4<sup>th</sup> Rijeka Days In Experimental Psychology

Since 2011, Department of Psychology at the Faculty of Humanities and Social Sciences in Rijeka in conjunction with its Laboratory for Experimental Psychology organizes a small conference dedicated to experimental psychology. The aim of this event is to promote the experimental method as an indispensable tool for uncovering the mysteries of the human (and animal) mind. Also, it encourages cooperation with other disciplines such as neuroscience, linguistics, and computer science. In honour of Professor Branko Sremec, prizes for two best student presentations in experimental psychology will be awarded. As part of this event, Professor Pavle Valerjev from the University of Zadar will discuss the latest research in the field of deductive reasoning.

Finally, I would like to thank all plenary speakers and all presenters for their contributions to the strong scientific content of the AAPC16. Also, I would like to thank members of the Program Committee for evaluating all submitted abstracts and members of the Organizing Team who put a lot of effort in making AAPC16 memorable and exciting event.

*Dražen Domijan*

Chair of the Program Committee  
and Organizing Team of the 12<sup>th</sup> AAPC

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## 12<sup>th</sup>Alps Adria Psychology Conference

September 29<sup>th</sup> - October 1<sup>st</sup>, 2016

University of Rijeka

Croatia

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*ABSTRACTS FROM THE 12<sup>TH</sup> ALPS ADRIA PSYCHOLOGY CONFERENCE*

September 29 – October 1, 2016

University of Rijeka

Croatia

*Note:*

The book of abstracts contains published abstracts received from the authors. Possible interventions in the text summaries represent minor modifications, with the effort not to change the meaning of the text.



*INVITED TALKS*

**The credibility of psychological science at stake:  
Lessons to be learned from low reproducibility of  
psychological studies**

Valentin Bucik

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Ljubljana, Slovenia

Many psychology papers fail replication test was one of the most frequent and loudest headlines in scientific and popular press reporting a study entitled Estimating the reproducibility of psychological science published in Science in 2015 by 270 authors - researchers in psychology from different parts of the world. The authors tried to replicate 100 empirical studies, published in three prominent American psychological journals from 2008. Namely, modern science understands scientific findings as reproducible, replicable, and generalizable. The results of the study were sobering and presented a clear challenge to the field, as the reproducibility turned up to be surprisingly low. In general, reproducibility seems undervalued because scientists prioritize novelty over replication. Innovation is the engine of discovery; researchers are usually driven by searching for the barriers of science; when a topic seems covered, they tend to rush forward but forget to stop and check the stability of the outcomes. However, reproducibility and cross-validation also help to establish a firm nomological network and a high validity of scientific theories. We need to talk about it and include the topic in the academic curricula for studying psychology because science can learn from replication studies, critically pointing to important issues in planning and performing research of good quality. It will also help prevent the manipulations and the poorly supported reproaches of psychology. In public debate there are occurrences of misuse of the Science replicability study such as erroneous and malicious interpretations of the results that more than two thirds of psychological studies are falsified, faked, or fraudulent with clear intention to discredit psychology as a science and profession by simply stating that it is not trustworthy enough to be taken seriously. As one of the after-effects of the Science study we can expect that journals will most likely publish more replications in the future. They are already launching new policies that will encourage authors, editors, and reviewers to re-examine and recalibrate the basic notions about what constitutes a good research. Editorial boards will advance the acceptance culture of the submitted articles such as sharing data, the analysis code, and study materials, disclosing all data exclusions, requiring authors to discuss sample sizes and statistical power, report effect size, etc. There are at least two heartening lessons that can

be learned from the Science study: (a) that the project was conducted with concern about the health of the discipline, believing in its promise for accumulating knowledge about human behaviour that can advance the quality of the human condition; and (b) that many will be tempted to conclude that psychology is a bad apple in the basket. However, this is not the case: this is a problem shared with natural sciences, medical sciences, and biomedicine, as well as behavioural or social sciences, because the replication efforts in other fields are similarly low.

**To understand intergroup relations: The socially  
embedded Self and Other in play**

Sara Bigazzi

Institute of Psychology, University of Pécs, Pécs, Hungary

The aim of science is to understand reality. When we try to understand a social phenomenon we think about causes, effects, and what makes a contribution or not, to a „supposed” progress. We think about how to produce change and with which derivatives. More than focus on the myth of generalisation, it's important to care about predictability of phenomena (Tajfel, 1981). Social psychology in this way has the responsibility to contribute to the understanding of negative social phenomena (e.g., intergroup conflicts, wars, terrorism, Holocaust) and to designate the conditions of what it thinks to be directions of “progress” (e.g., recognition of diversity in knowledge production, process of cooperation, community development, inclusiveness). Its main contribution in understanding reality is to highlight the importance of how individuals create and maintain their point of view and “knowledge” is strictly related to the social context in which they live and act according to their own psychological perspective. To explain these considerations different theoretical approaches are taken into account. The theory of social identity (Tajfel, 1981) will help to understand the point of view of the individuals; the theory of social representation (Moscovici, 1973, 1981, 1984) frames the social creation and negotiation of “knowledge”, thus even cultural diversities; and finally the theory of narrative social psychology (László, 2001, 2007, 2013) explains the psychological organisation of both identity and worldview and how these constructions and reconstructions can be captured. I will present the results of different research that explores self/other construction as possible causes of intergroup conflicts, such as: how prejudice is related to threat (refugees, migrants, Gypsies), how majority identification influences the way people think about Minorities (collective victimhood and its dynamic), and how being a member of a threatened Minority group delimits an individual's cognitive alternatives (Bokrétás, Bigazzi & Péley, 2007; Bigazzi & Csértő, 2016; Bigazzi & Serdült, in press).

**Novel contributions of Anderson's theory of information integration to intuitive physics**

Sergio C. Masin

Department of General Psychology, University of Padova,  
Padova, Italy

The research methodology based on Anderson's theory of information integration represents one of the most fruitful techniques for investigating mental processes. This methodology is briefly described with examples of application in various fields of psychology. Its power in unraveling hidden information is more specifically demonstrated in the field of knowledge assessment. A striking example of this is the assessment of people's intuitive knowledge of the laws of the ordinary physical world, which has led to the unprecedented finding that lay people generally have correct intuitive knowledge of these laws.

*KEYNOTE LECTURES: SYMPOSIUM ON METACOGNITION*

**Meta-reasoning: The challenge of effective reasoning regulation**

Rakefet Ackerman

Technion—Israel Institute of Technology, Haifa, Israel

The metacognitive framework (Nelson & Narens, 1990) deals with effort regulation while performing cognitive tasks, such as learning. To date, this framework was examined empirically mainly by studies involving memorization tasks. As a result, it is often referred to as Meta-Memory. The Meta-Reasoning framework (Ackerman & Thompson, 2014) deals with effort regulation while solving reasoning problems. It suggests that in some respects there are analogies between meta-memory and meta-reasoning, while in others, alternative theoretical approaches are needed. For instance, while isolated words are clearly memorable by healthy adults, a reasoning problem may be unsolvable in general or for the particular person (e.g., lack of math knowledge). Thus, while investing a lot of effort in memorization is likely to be valuable, waste of time is a likely outcome when one cannot solve a problem. Can people identify unsolvable problems in the first place? When are they willing to give up a problem after engaging in solving it? Can they adjust their efforts to work effectively under time pressure? What are the predictable biases in judgments and effort regulation while solving problems? Theoretical and practical aspects will be discussed.

**Is metacognition "hot"? The role of affect in metacognition and self-regulated learning**

Anastasia Efklides

School of Psychology, Aristotle University of Thessaloniki,  
Thessaloniki, Greece

The term "hot cognition" has been used in the past to denote that cognition and affect interact in cognitive processing to support intuition, creative thinking, decision making, or analytic thinking. I propose that if we look at metacognition in the broader context of self-regulated learning (SRL) metacognition is also "hot". Specifically, metacognitive experiences, namely feelings and judgments as one works on a task, are closely connected to positive and negative affect as well as emotions. Neuropsychological evidence shows that metacognitive experiences and affect share brain mechanisms (i.e., the Anterior Cingulate Cortex). Moreover, fluency or making progress in cognitive processing elicits positive affect and metacognitive experiences such as ease of processing whereas disfluency elicits negative affect and feeling of difficulty as well as awareness of effort exertion. Also, cognitive events such as cognitive interruption increase feeling of difficulty and elicit surprise. Moreover, there is evidence suggesting that one's mood state has effects on metacognitive experiences such as feeling of difficulty or judgment of effort exertion, and metacognitive experiences, in their turn, have effects on affect. For example, metacognitive experiences have reciprocal relations with self-concept, contribute to attributions regarding competence or effort (that underlie the formation of achievement emotions), and feeling of confidence is part of the mechanism that triggers curiosity. Conceptualizing metacognition as hot can explain the complex relations between monitoring and control in SRL, and particularly why metacognitive experiences do not often suffice to activate effective metacognitive and cognitive control strategies.

*INVITED TALK: 4<sup>TH</sup> EXPERIMENTAL PSYCHOLOGY DAYS IN RIJEKA*

**Deductive reasoning: Why people are not always logical**

Pavle Valerjev

Department of Psychology, University of Zadar, Zadar, Croatia

Research on reasoning deals with the processes of deductive, inductive and analogical reasoning. Since the theoretical frame of cognitive psychology considers thinking as a process of mental representation manipulation, the traditional intelligence-test approach is not enough. A psychological experimental approach is needed to gain insight into the mental processes of thought. Systematic research on deduction originated in the 1960's when the British psychologist Peter Wason investigated this subject. These experiments

demonstrated that there were significant and systematic deviations in human deduction when related to traditional and formal logic. For example, the paradigm of the Wason selection task reveals the biases in human reasoning such as the confirmation and matching bias, among others. These biases are connected to specific reasoning heuristics and are usually the cause of the characteristic fallacies in specific reasoning situations. A change in reasoning conditions (e.g., the use of abstract or concrete content) can change the activation of the specific bias and drastically change the reasoning outcome. Therefore, these situations encourage a strong and confusing impression of people being limitedly logical or even non-logical. However, these observations nicely fit into the modern dual process theory. Dual process theory explains that there are two types of processes involved in thinking: Type 1 which is rapid, automatic and based on the activation of heuristics and biases, and Type 2 which is slow, demands mental effort and is based on mental skills (e.g., mathematical or logical skills). Theories of deductive reasoning are usually divided into three classes: deduction as the process of factual knowledge connecting; deduction as the syntactic process based on the rules of formal logic; and deduction as the semantic process based on representations called mental models. The third theory describes mental models as crucial representations that are related to systems of long-term and working memory and offers explanations of a broad set of phenomena which includes reasoning with syllogisms, conditionals, inductive reasoning, and representation of discourse, probabilities and mental simulations. The information that models include cannot only be abstract, but also based on perceptive and motor systems which can be a link that relates reasoning studies with embodied cognition. Finally, the reasoning constraints described by mental models theory contribute to the explanation of characteristic logical fallacies and reasoners as limited in logical problem solving.

#### INVITED TALK

##### **Social comparisons - How other people influence who we are and what we want**

Katja Corcoran

Department of Psychology, University of Graz, Graz, Austria

People are social beings. We seek affiliations, work in groups, and strive for long lasting personal relationships. But other people do not only comfort us, support us and help us, they also influence our own understanding of our self. Social information based on comparisons between the self and others is a crucial building block of our self-knowledge. Furthermore, social comparison could make us feel good or bad and might have a motivating function. In this talk, I will present our understanding of how social comparison

unfolds. Social comparison is a very flexible process. The outcome of a comparison process does not only depend on the person one compares with, but also on the comparison process itself. Sometimes we assimilate to a standard and at other times we contrast away. Thus, if people want to profit from the comparison and use it to feel good or to be motivated, one has to understand in more detail the complex mechanisms of social comparisons.

#### PSYCHOMETRICS

##### **On the convergence of ability-based and rating measures of emotional intelligence**

Amela Mujagić<sup>1</sup>, Vesna Buško<sup>2</sup>, Ana Babić Čikeš<sup>3</sup>

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The paper presents the data on empirical validation of the three ability-based measures of emotional intelligence (EI) intended for early adolescents. The data derive from the longitudinal study of EI development conducted on the sample of 517 primary school students aged 10 to 15 years. Performance based EI measures administered in the study included: Perception of affective content in art test (TAES; Takšić et al., 2004), adapted version of the Emotional analysis test (TAE; Kulenović, 2003) and Emotion management test (TUE; Babić & Buško, 2013). Along with the objective measures of EI abilities, peer ratings and teacher ratings of the emotion-related reasoning abilities pertaining to the same branches of the Mayer and Salovey's (1997) model, that is, perception, understanding, and management of emotions, were also collected. The EI data from all three sources were analysed within the SEM methodology including separate and joint analyses of latent structures of EI abilities measured by performance-based and other-rating measures. Confirmatory factor analyses performed under the multitrait-multimethod framework did not prove the theoretically expected structure of relationships among latent EI measures showing a weak structure of loading parameters, which appeared to be largely due to strong method effects on observed variability in EI measures. However, joint analyses of latent EI dimensions based on test- and rating-multiple indicator data produced reasonable and well-fitting solutions. Results point to low discriminant validity of EI other-report measures, which particularly applies to teacher ratings. Furthermore, a moderate level of convergence was found between latent dimensions of the same EI abilities specified by the data from different sources. The findings are interesting as from the measurement and methodological standpoint so too from the theoretical and interpretational view.

### **Using item response theory to validate a clinical instrument: The case of PTSD checklist-5**

Helena Bakić, Mitja Ružojčić, Blaž Rebernjak

Department of Psychology, Faculty of Humanities and Social Sciences, University of Zagreb, Zagreb, Croatia

Posttraumatic Stress Disorder checklist (PCL; Weathers et al., 1993) is one of the most popular instruments for assessing posttraumatic stress disorder (PTSD) symptoms and for PTSD screening. Recently, a new version of PCL (PCL-5; Weathers et al., 2013) was published, accompanying the changes in PTSD symptomatology which occurred in the DSM-5. In this study we wanted to investigate measurement characteristics of the Croatian translation of this new and improved PCL version using an item response theory (IRT) approach. Our first goal was to investigate the internal structure of the PCL through confirmatory factor analysis (CFA). Following that, our second goal was to investigate item characteristics of the PCL with IRT methods in order to find out about suitability and discrimination ability of each item of the questionnaire depending on the levels of PTSD. We conducted the analyses on 450 randomly sampled community members from a municipality struck by flooding in May 2014 and a comparison, non-flooded community. Results of the CFA strongly suggested a unidimensional structure of the questionnaire, with one latent construct sufficient to explain the covariance among all the items. In addition, multigroup CFA indicated measurement invariance between the two samples, thus allowing that IRT analysis can be conducted jointly for the whole sample. IRT analysis was conducted on dichotomized items (where 1 indicated symptomatic response), and results indicated a 2-parameter model as the most appropriate for describing PCL item characteristics, with both discrimination and location parameters considerably varying among items. Item-level analyses have shown that the majority of items is most informative among individuals with mid to high levels of PTSD ( $\theta = 0-2$ ). However, some items, although generally less informative, performed better at lower and higher PTSD levels and should prove more useful for detecting people with subclinical PTSD levels and those with more extreme PTSD symptoms. Implications of using IRT in questionnaire development will be discussed.

### **Emotional Skills and Competence Questionnaire in cross-cultural studies**

Vladimir Takšić<sup>1</sup>, Tamara Mohorić<sup>1</sup>,  
Bo Molander<sup>2</sup>, Stefan Holmström<sup>2</sup>

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The main goal of cross-cultural studies is comparison of constructs and scores between various countries. Early

studies had common methodological problems, for example cross-cultural similarities and differences were often visually (and not statistically) tested, lack of rationale for selecting countries, no check on quality of translation/adaptation, results are often generalized to large populations (e.g., complete populations of countries) although no probability sampling has been employed to recruit participants, etc. Application of assessment methods to different languages and cultural backgrounds, without taking in account these problems, can result in questionable cultural comparability. Since we are not certain of the cross-cultural meaning of constructs, the validity and the interpretation of measures needs to be done with caution. Researchers should pay specific attention to structural equivalence and metric invariance of measures. Measurement invariance is related to the degree to which items and constructs have an equivalent meaning for individuals of different cultural backgrounds. Analysis of item bias or differential item functioning (DIF) should be done on the item level. Statistical techniques for evaluating DIF items allow us to compare any groups defined by the researcher in order to secure that the members of the compared groups have the same probability of answering the items correctly if they have the same level of latent variable. Emotional Skills and Competence Questionnaire (ESQ) has been translated and validated in several languages, and has shown good psychometric properties. Results from these studies will be presented with special attention given to problems of DIF items and different statistical approaches for their detection. Future development of cross-cultural testing should benefit from the increasing use of international tests and testing; new psychometric models and new technologies; new item formats and multi-media functions; and the higher demand for courses and training in the psychometric field.

### **An index for ascertaining consistency to a Likert scale**

Giovanni Battista Flebus

Università Milano-Bicocca, Milano, Italy

An index to ascertain intraindividual consistency is proposed, based on the features of the optimal scoring method to scale a questionnaire. Highly consistent respondents display higher Cronbach's alpha and a higher percentage of variance accounted for by the first eigenvalue extracted from the correlation matrix of items. The proposed index is illustrated by and compared to, other personality traits (such as conscientiousness and agreeableness), and to response style (tendency to give extreme responses). The index can be applied to any questionnaire, and can help in singling out inconsistent respondents.

### **Studyholism or study addiction? Psychometric properties of The Studyholism Inventory (SI)**

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Krystyna Golonka<sup>2</sup>

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In literature, there has been great interest on workaholism (i.e., addiction to work); however, only Atroskzo, Andreassen, Griffiths, and Pallesen (2015) proposed to analyze a similar addiction in the school context, proposing the construct of study addiction. However, we suggest that this clinical condition could be more similar to an obsession rather than to an addiction; for this reason, we recommend the term Studyholism and we highlight the main differences from study addiction. The aim of this study was to develop an instrument (i.e., the Studyholism Inventory; SI), which allows distinguishing among four kinds of students: engaged students, engaged studyholics, disengaged studyholics, and detached students. First, a pool of 68 items was created with reference to the workaholism literature, covering three hypothetical factors: addiction symptoms, obsessive-compulsive symptoms, and study engagement. Then, 340 University students filled out the test and data were analyzed to reduce the total number of items; next, 398 Polish students filled the 10-item reduced version. The results of both Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) on the Italian and Polish samples showed a two-factor solution for the SI: (a) obsessive-compulsive symptoms (or studyholism) and (b) study engagement. This study showed that this potential new clinical disorder might be more similar to a study-related obsession than to a study-related addiction. Moreover, studyholism seems not to be a combination of both externalizing (i.e., addiction) and internalizing (i.e., obsessive-compulsive) symptoms, as hypothesized, but rather it seems to be characterized only by internalizing symptoms. Given that Studyholism is a new emerging construct, the Studyholism Inventory could be a useful instrument in further research aiming to address the features and correlates of this construct.

#### *SYMPOSIUM: CHILD WELL-BEING*

### **Structural dimensions of the culture of the institution of early education: Ensuring the well-being of child**

Lidija Vujičić, Akvilina Čamber Tambolaš

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Croatia

The culture of a preschool institution is determined as a strong network of traditions, rules, norms and behaviours of

all its participants and is recognised by their mutual relations, by the leadership of the institution, by the organisational and physical surrounding and by the level of orientation to learning and research. The spatial and material surrounding and the time organisation of living are the structural dimensions of the context of the institution through which the culture of the institution becomes transparent. Therefore we opine that the structural dimensions of the context of the institution powerfully determine the mode and the quality of children's lives. The National curriculum for early and preschool education (2014) is oriented towards ensuring the wellbeing of a child and is an interactive and contextual process which integrates a successful individual functioning and positive social relations in a quality surrounding of the kindergarten which, among other things, is constituted by space, materials and time organisation. Thus an appropriate organisation of structural dimensions of the context of the institution can be considered as one of the ways of ensuring the well-being of a child. The work presents the differences in shaping structural dimensions of the context of the institution in three different countries. The research was conducted on the overall sample of  $N = 680$  educators in Croatia (35%), Serbia (40.4%) and Slovenia (24.6%). The Questionnaire for the Evaluation of the Culture of an Educational Institution, which has been designed for the purposes of the scientific and research project „The Culture of an Educational Institution as a Factor in the Co-Construction of Knowledge“ by the Faculty of Teacher Education in Rijeka was used for data collection. Using the Scale of the State of Kindergarten Culture we strived to examine the current state of structural dimensions in institutions of early education. In order to determine whether there are differences in shaping structural dimensions in the institutions of early education between the three countries, a unidirectional analysis of the variance (ANOVA) was undertaken. A statistically significant difference was found between the countries in all the variables of the current state of structural dimensions of the institution. The findings indicated that educators in Croatian institutions of early education apply contemporary strategies in designing and organisation of the spatial and material surrounding more often, as well as implement a more flexible time organisation of living in the institution.

### **Neurofeedback as a tool for enhancing children's well-being**

Draženka Šepić Labrović<sup>1</sup>, Sanja Tatalović Vorkapić<sup>2</sup>

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Neurofeedback (NFB; Brain-feedback method) presents today one of the methods by which it is possible to improve cognitive performance in children who do not have any specific disorders. Also, NFB can help in solving various difficulties that occur in a great number of disorders (e.g.,

attention deficit and hyperactivity disorder, stress, headache, etc.). Although this method is applied in Croatia and worldwide, studies have shown inconsistent results about the evaluation of NFB efficacy for various reasons. Because of that, this method is defined as a research method and not as a therapeutic method. Therefore, the main aim of this paper is to present the main characteristics of neurofeedback, its application possibilities and its efficacy through a case study. Besides that, the possibilities of its use combined with some therapeutic techniques such as cognitive-behavioral therapy (CBT), will be presented with the aim of defining its strengths in enhancing children's well-being. In the case study, the child's basic problems have been difficulties with attention and concentration. In consultation with the parents, the neurofeedback method with SMR protocol was applied. The emphasis was to reinforce those brain waves within the frequency range of 12-15 Hz with parallel inhibition of theta waves (4-7 Hz) and a reduction of the relation between theta and beta waves (theta/beta ratio). Twenty training sessions have been conducted. The treatment has also included cognitive training and CBT approach. In cooperation with the parents, changes in the upbringing style at home and indirectly in the school behavior have been introduced. There has been significant progress in the school behavior with fewer distractions in class, better concentration and attention, and better organization of learning at home with an increased level of satisfaction in the family members' interaction. Based on this case study and previous NFB research studies, several guidelines for future research are discussed.

#### **Assessment of preschool capacities for work with children from social welfare system**

Milana Rajić, Ivana Mihić, Gordana Jandrić  
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Novi Sad, Serbia

Current processes in early education are emphasizing the importance of social inclusion and preschool institutions' capacities for providing compensatory experience in caring for children at risk. As a part of preparation for piloting models of working with children from high-risk families, the research deals with the assessment of the capacities of institutions to work with these children. This study included 346 teachers in early education system in Vojvodina. They assessed the extent to which they feel competent and motivated for working with children from the social welfare system (children in foster care and residential institutions) and which gains these children could have from preschool. Also, they assessed the extent to which initial education and additional professional training have prepared them for working with children from the social welfare system. The majority of respondents (59%) said they had never had the opportunity to work with children in foster care or residential institutions. Most respondents also estimated that their initial or

further education did not prepare them to work with these children (the average score is 2.58 out of 5 for initial education and 2.7 out of 5 for training seminars). The key factors assessed as primarily contributing to developmental conditions of children in foster care and residential institutions were care in biological family, traumatic experiences and professional knowledge in caring for these children. Teachers expect that these children will have most problems in emotional response, relying on the support of teachers and teaching possibilities (for children from residential institutions), while for the children in foster care they mostly expect problems in establishing contacts with peers and generally in social interaction. Gains from kindergarten are estimated to be greater in the area of social interaction with peers, than in relations with teachers.

#### **Effects of estimated competencies and expectations in work with children with disabilities on the quality of teacher-child relationship**

Milana Rajić, Ivana Mihić

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Inclusive education implementation process implies continuity in monitoring and developing preschool institutions' capacities for working with children with disabilities. Research findings suggest that preschool teachers, working with children with disabilities, experience significantly higher levels of professional stress, and they tend to assess their competence significantly lower. This study included 346 teachers from preschool institutions in Vojvodina. They gave information on the expected challenges in work, competence and motivation for the work with children with disability. The quality of the teacher-child relationship (closeness and antagonism) was measured by Student-teacher relationship scale - SF (Pianta, 2001). Results indicate low levels of motivation for work ( $M = 2.48/5$ ), and low assessment of competence for work with children with disabilities ( $M = 2.21/5$ ). Most problems are expected in the field of contact with teacher and in relationships with peers. Teachers estimated peer relationships, relationship with teacher and gaining new knowledge as highly beneficial for the child if they are included in early education. In 76.6% of cases, however, children with disabilities, are estimated as the most demanding to work with (compared to other children at risk). Regression analysis indicates that, when it comes to the closeness dimension, the model is significant and it describes about 26% of the total variance: expected problems in social interaction ( $\beta = -.28, p < .05$ ), problems in emotional response ( $\beta = -.326, p < .01$ ) and problems in cognitive development ( $\beta = -.298, p < .05$ ), as well as sense of competence ( $\beta = -.22, p < .05$ ) and motivation ( $\beta = .35, p < .01$ ). For the antagonism dimension the model as a whole is not significant.

## DEVELOPMENTAL PSYCHOLOGY

### **The association between challenging behavior and certain functional characteristics of children with cerebral palsy**

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The research topic is based on the assumption of a multitude of causes of challenging behaviour in a population of children with developmental disabilities. The aim of the paper is to present preliminary results on the association between challenging behaviour and certain characteristics of a child with cerebral palsy perceived from the parents' perspective. The sample included 115 participants with cerebral palsy (65 male), 7–18 years old, from the Republic of Serbia. To collect the data, Child's Challenging Behaviour Scale, Version 2 (CCBS; Bourke-Taylor, Law, Howie, & Pallant, 2013) was used. Communication, cognition, and social skills were rated on a six-point ordinal scale. Motor abilities profile consisted of the gross motor (Gross Motor Function Classification System – Expanded and Revised, GMFCS–E&R; Palisano, Rosenbaum, Bartlett, & Livingston, 2007), fine manual (Manual Ability Classification System – MACS; Eliasson et al., 2006) and bimanual abilities (Bimanual Fine Motor Function – BFMF; Beckung & Hagberg, 2002). Descriptive statistics and Spearman's rank correlation coefficients were calculated. The preliminary data showed that not all variables were statistically significantly correlated. Particularly, only communication ( $\rho = .194, p = .038$ ), cognition ( $\rho = .210, p = .024$ ), and social skills ( $\rho = .426, p < .001$ ) correlated positively with the extent of challenging behaviour exhibited by a child with cerebral palsy during daily life. The results indicated that parents perceived their child's behavior as more challenging if communication, cognition, and social skills were assessed as more severely limited. On the other hand, parents equally perceived behavior as challenging regardless of the limitations in motor abilities. The results suggest the possibility of intervention in the field of challenging behavior by improving communication, socialization, and cognition of children with cerebral palsy.

### **The relationship between fear of death and fear of darkness among adolescents**

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Introduction: Fear of death is most intense among adolescents, especially regarding fear of the unknown and fear for the body after death (Tóthné Zana, 2009). Fear of darkness is also significant in this age group (Kopcsó & Láng, 2014). Our research aim was to examine the relationship between these two fears (both related to uncertainty and separation) among adolescents, considering the effect of significant losses and biological sex. Methods: 163 secondary school students (96 females), with the average age of 16.75 ( $SD = 0.051$ ) participated. Subjects filled the Hungarian versions of the following questionnaires: Multidimensional Fear of Death Scale (Neimeyer & Moore, 1994), Fear of Darkness Intensity Scale (Kopcsó & Láng, 2014) and Trait Anxiety Inventory (Spielberger et al., 1983). Past experience of a significant loss and the intensity of related emotions were also assessed. Results: Controlling for the effect of sex, the overall fear of death score showed weak but significant relationship with trait anxiety ( $r = .279$ ) and a correlation of moderate strength with fear of darkness ( $r = .450$ ). Controlling for trait anxiety too, the correlation between fear of darkness and overall fear of death slightly declined but remained significant ( $r = .397$ ). The associations with Fear of the Dead ( $r = .440$ ) and Fear of the Dying Process ( $r = .377$ ) subscales were the most substantial. The experience of a significant loss was related to two aspects of fear of death; Fear for Significant Others and Fear of the Dead, while negative emotions regarding the loss showed a relationship with trait anxiety and several fear of death subscales. Conclusions: Our study implies that the past experience of a loved one's death affects adolescents' anxiety and fear of death. Results also suggest, that fear of death and fear of darkness share some common, anxiety-independent factors.

### **The refugee children drawings as indicators of trauma**

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Refugee children experience a great number of stressors (e.g., direct exposure to war time violence and combat, displacement and loss of home) that impact their psychological well-being. A variety of symptoms including anxiety, depression, recurring nightmares and behavioral problems, have been documented and linked to the trauma exposure prior to and during migration, with the prevalence of post-traumatic stress symptoms reported to be between 50-90%. The impact of exposure to traumatic events on children and symptom manifestation may be different depending on the child's age and stage of development. Children's spontaneous drawings may be used as an indicator of both their cognitive state and their emotional state. We focus on examination of possible trauma indicators among refugee chil-

dren (5-9 years old) in Serbia while passing the “Balkan route”. The content and Pickard’s expressive strategies for mood depiction were analyzed on 354 drawings. Content analysis revealed Home (30%), Sea/ships (20%), Flags/country (20%) and Transportation (18%) as the most frequent. The content of Violence/War, which we used as one of the indicators of traumatic experiences, appeared in 9% of drawings. Further analysis revealed that negative mood is depicted by more complex and detailed drawings,  $F(2) = 13.12, p < .001$ , while two expressive strategies of literal and non-literal content appeared as strong predictors only to negative mood depiction – specifically, the absence of facial characteristics (e.g., mouth;  $B = 3.56, p = .04$ ) and type of object drawn (e.g., tears, knife;  $B = -3.10, p = .002$ ). These findings suggest that the drawings can be used as a triage tool to assess the emotional status of refugee children, furthering the need to address their emotional issues promptly and to reduce the long-term impacts of exposure to distressing events. Further implications are discussed.

*Acknowledgments:* The authors would like to thank Novi Sad Humanitarian Center for the help with collecting the drawings.

#### **Emotional development in the context of childhood temperament, family dynamics and mothers’ emotional capacities**

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The aim of present study is to investigate the role of family context and mothers’ emotional capacities in the development of emotion regulation of children. We studied parenting practice related to emotion management (Difficulties in Emotion Regulation Scale), emotional expressiveness (Family Expressiveness Questionnaire) and emotional climate of the family (Family Adaptability and Cohesion Evaluation Scale). We observed 5-8-year-old children’s emotional capacities via Test of Emotion Comprehension and we assessed the children’s temperaments (Children Behaviour Questionnaire) and emotion regulation (Emotion Regulation Checklist) by parents’ report. The results revealed that the children’s emotion regulation is affected by the emotional climate of the family via family emotion expressiveness regarding the degree of positive and negative emotionality expressed in the family. The maladaptive regulatory behaviours of parents in the family context influence the development of children’s understanding of how emotions function and are managed in oneself. Our results imply that the family context and the family expressiveness might mediate the relations between the maternal emotion dysregulation and the child emotional development.

#### **Self-esteem and empathy among students of secondary schools in Belgrade**

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Self-esteem and empathy are frequently researched concepts which affect the quality of interpersonal reactions and functioning in a social setting. Considering the views of some authors that self-esteem is the basis of empathy, we conducted a study designed to examine the connection between empathy and self-esteem. The research was conducted during the first half of 2015 in five Belgrade secondary schools on a sample of 563 first year students (52.6% boys). During the research we used the Rosenberg Self-Esteem Scale (Rosenberg, 1965),  $\alpha = .80$ , and the Basic Empathy Scale (Joliffe & Farrington, 2006),  $\alpha = .79$ , with the subscales that measure the affective and cognitive component of empathy. The results show that the students achieved average scores  $M = 3.84 (SD = 0.56)$  on the Rosenberg Self-Esteem Scale. In terms of empathy, students have higher scores on the cognitive ( $M = 4.11, SD = 0.57$ ), then the affective component ( $M = 3.08, SD = 0.79$ ). The data show that there is a connection between self-esteem and empathy in both components, but the correlation with the affective component is negative ( $r = -.232$ ), and positive with the cognitive component of empathy ( $r = .156$ ). When observing gender differences, there is a somewhat stronger negative correlation between self-esteem and affective components in girls ( $r = .223$ ) than in boys ( $r = .191$ ), whereas the differences in the cognitive components are not recorded. According to the results it can be concluded that there is a connection between self-esteem and empathy, but the correlations are low. In interpreting the results, it is necessary to take into account that self-esteem stabilizes later in adolescence, and that the resulting negative correlation between affective empathy and self-esteem can be due to an age variable and it is necessary to examine the connection further.

#### **The link between self-esteem and emotional and behavioral difficulties of secondary school students in Belgrade**

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Internal capacities such as children’s confidence and self-esteem are significant protective factors which reduce the probability of development of various difficulties in social functioning. In order to examine the connection between self-esteem and the various problems in the functioning of adolescents a research was conducted during the first half of 2015 on a sample of 563 first year students (52.6% boys) of five secondary schools in Belgrade. We used the

Rosenberg Self-Esteem Scale (Rosenberg, 1965),  $\alpha = .80$ , and The Strengths and Difficulties Questionnaire (Goodman, 1997),  $\alpha = .78$ . Correlation analysis shows that there is a negative correlation between self-esteem and total difficulties ( $r = -.524$ ), where the strongest relationship occurs between self-esteem and emotional problems ( $r = -.485$ ), hyperactivity ( $r = -.382$ ) and difficulties in relationships with peers ( $r = -.315$ ), while a weaker correlation appears with behavior problems ( $r = -.118$ ). Observing gender differences, it can be seen that in boys significant correlations are found on scales of behavior problems ( $r = -.176$ ) and the prosocial scale ( $r = .170$ ), while in girls correlations between these scales are not significant. Stronger correlations appear in the group of girls on the scale of total difficulties ( $r = -.539$  girls, boys  $r = -.497$ ), as well as emotional problems subscales ( $r = -.531$  girls, boys  $r = -.402$ ) and hyperactivity ( $r = -.426$  girls, boys  $r = -.330$ ), while in the group of boys a stronger connection was observed between self-esteem and problems with peers ( $r = -.221$  girls, boys  $r = -.434$ ). Based on the results it can be concluded that students with lower self-esteem have more pronounced problems in emotional functioning, maintaining attention and peer relations.

#### CLINICAL AND APPLIED PSYCHOLOGY

##### Causal attributions of illness in patients with cardiovascular disease

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Many studies in the field of illness perceptions are based on Leventhal's common sense model of self-regulation, which proposes that individuals construct a representation of illness and health according to information available to them. The important aspects of illness perception are its perceived determinants - causes. Most patients suffering from cardiovascular disease (CVD) have bad health habits that put them at risk for another event, so changing the behavioural risk factor seems to be an important goal in the context of rehabilitation and functional outcome. The purpose of the present study was to explore causal attribution of illness in patients with CVD. The clinical sample included 122 adults (38 female) aged from 31 to 88 years. The patients were admitted to the Department of Cardiology and Cardiac Rehabilitation for a major cardiovascular event, acute myocardial infarction or myocardial revascularization. They completed a set of questionnaires related to illness perception, cardiac anxiety and general anxiety and depression. Factor analysis identified three groups of causal beliefs about illness: psychological attributions (e.g., family problems, personal attitude, personality, emotional state, overwork, stress and worry, case or bad luck), immunity (e.g., bacteria or viruses,

pollution, poor medical care), and general risk factor/lifestyle (e.g., diet or eating habits, alcohol, overweight, and heredity). In our sample, the main causal attribution for CVD are stress and worry (72.8%), heredity (57.9%), chance or bad luck (41.3%), family problems (42.1%) and overwork (41.3%). Psychological attribution was the only significant predictor of anxiety in CVD patients; while the predictors of depressive symptoms are age, BMI and also psychological attributions. The older patients with higher BMI and those who attribute their illness to psychological causes are also the more depressed. Causal beliefs are discussed in the context of interventions designed to maximize health outcomes in CVD patients.

##### The power of abjection: Postpartum depression from a psychoanalytic point of view

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Postpartum depression is the most common complication of childbearing, affecting approximately 10-15% of women and as such represents a considerable public health problem affecting mothers and their families. Parent's postnatal depression can have a long-term negative impact on a child's cognitive, social and behavioral development. Although several articles and books are written about postpartum depression, few are psychoanalytically informed, and the psychodynamic character of this problem is underrepresented in these writings. In my paper I would like to explore postpartum depression by using the theory of French philosopher and psychoanalyst Julia Kristeva's concept of abjection, which is built on the psychoanalytic theories of Jacques Lacan. Kristeva's abject theory is focused more on the infant, abjection is the archaic experience of differentiation of the (later) subject; in the process of abjection the infant separates him or herself from the mother's body. In my presentation I would like to focus on the mother's experience of abjection: pregnancy, birth giving and breastfeeding are boundary situations in which disturbance of identity can cause abjection, the fragile border where identities (subject/object) are challenged can create a traumatic experience. Body changes and body fluids confront new mothers with materiality which traumatically shows their mortality and own death. Fear and disgust are common phenomena of both postpartum depression and the Kristevan sense of abjection. With the use of the Kristevan framework of abjection I attempt to better understand the fear and refusal of mothers who are having postpartum depression.

### **Social pressure and eating disorder symptoms in athletes: The importance of self-criticism and social appearance anxiety**

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Clinical evidence suggests that pathological self-criticism underlines social pressure on appearance which exerts a greater influence on eating disorder symptoms. However, little attention has been addressed to this line of research within the athletic population. The current study examines the association between self-esteem, social appearance anxiety and self-criticism on eating disorder symptoms among athletes. The participants were 511 students of the Faculty of Kinesiology in Zagreb, from 18 to 28 years old, where 334 of them were male, engaged in different sports. They completed a set of self-report questionnaires. Path analysis was used to test the predictive role of social pressure from important others (parents, coach, friends, teammates) on eating and body shape, and the moderating role of self-esteem, social appearance anxiety and self-criticism on eating disorder symptoms among athletes, depending on gender. Results revealed that there was a difference in occurrence of eating disorder symptoms between genders; more female athletes reported symptoms of an eating disorder. Results show that, for female athletes, social pressure on eating and body shape has a direct effect on eating disorder symptoms (.65\*\*) and an indirect one, through self-criticism (.08). For male athletes social pressure has a direct effect on eating disorder symptoms (.51\*\*), and an indirect one through self-criticism and social appearance anxiety (.17). Social pressure has a bigger direct effect on eating disorder symptoms for female than for male athletes. These results show that social pressure represents an important factor among athletes, both male and female, when it comes to development of eating disorder symptoms. It also shows that different constructs mediate this influence: self-criticism for female, and self-criticism and social appearance anxiety for male athletes.

### **Do family environmental factors predict parental and child health outcomes over 10 years?**

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Early life stress and poor family environment are risk factors not only for child behavioral and emotional disorders but also for later chronic diseases in adulthood. Building upon this research, the current paper elucidates the associations between family environmental factors, child

physical and mental health, and parental factors over a 10 year longitudinal study of families. Participants with a child 2½ to 6 years old were recruited from daycare centers in Germany and assessed seven times over the course of the 10-year study. Participant retention was excellent across all follow-ups (over 90%). Results highlight the important role of early family environment and parental relationship quality in understanding health outcomes for children over time. Gender differences and moderators were also identified. These results have the potential to be informative for early intervention efforts with families.

### **What are the benefits of high-quality supervision? The results of the SUPER PSYCHOLOGIST project**

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The EuroPsy standards consider a one-year supervised practice for the newly educated psychologists an effective way to provide high-quality psychological services. During supervised practice, psychologists beginners develop their professional competences under the support and guidance of an experienced psychologist qualified for supervision. To implement a system of supervised practice in Slovenia, we developed a comprehensive training programme for supervisors. In the SUPER PSYCHOLOGIST project carried out within the Norway Grants 2009–2014 Programme, 25 supervisors were trained to develop and assess specific professional competences in psychologists beginners, they developed knowledge and skills of supervision and learned how to establish an appropriate supervisory relationship, support the professional growth of supervisees and promote their mental health. We compared the outcomes of a one-year supervised practice of 29 psychologists beginners whose supervisors had been trained in our programme (Group 1) with the outcomes of the regular probation period of 61 psychologists beginners whose supervisors had not been specifically trained in supervision (Group 0). Participants assessed their supervisors and supervision using the Supervisory Relationship Questionnaire (SRQ). They also assessed their own professional competences at the end of supervised practice and reported retrospectively on their competences prior to its beginning. In comparison to Group 0, Group 1 assessed their supervisors higher with regard to their psychological knowledge and skills, teaching competences and commu-

nication skills. Group 1 supervisors fulfilled the beginners' professional needs better, provided safer relationships and clearer structure of supervision, showed higher commitment to supervision, represented better role models, and provided more reflection and evaluative feedback. However, supervision with trained supervisors did not lead to larger development of professional competences, indicating that the development of competences is related to other factors besides high-quality supervision.

**Predicting posttraumatic stress after a natural disaster:  
The role of individual resilience, perceived social  
support and psychological resource loss**

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In May 2014 a disaster flooding struck three municipalities in the southeast region of Croatia. With two casualties, 9,000 evacuated people, 7,500 houses destroyed and 1.2 billion HRK in damage it is considered one of the most devastating disasters in modern Croatia. A year and a half after the flooding we interviewed 450 randomly sampled community members from the most severely struck municipality (Gunja) and a comparison, non-flooded community in the close vicinity of the flooded area (Bošnjaci). The objective was to explore the role of individual resilience, perceived social support and psychological resource loss in explaining post-traumatic stress symptom severity. A three-step hierarchical model was tested in both communities. The first step included sociodemographic characteristics (gender and age) and perceived life threat; in the second, perceptions of social support from significant other, family and friends and individual resilience were added; in the third step, perceived loss of psychological resources was added. The full model accounted for 49% of the variance in PTSD symptoms in the affected and 21% in the comparison community. In both communities, psychological resource loss was the strongest predictor of PTSD symptoms (higher psychological resource loss predicted more severe PTSD symptomatology). However, the role of perceived social support and individual resilience differed between the two communities. In the affected community, individual resilience independently predicted less symptoms of PTSD, while perceived social support did not; in the comparison community the opposite was true: perceived social support independently predicted less symptoms of PTSD, while individual resilience was not a significant predictor. In addition, in the flooded community psychological loss mediated the relationship between individual resilience and PTSD symptoms: more resilient individuals perceived less psychological loss, which in turn predicted lower levels of symptoms. The results are discussed under the framework of resilience theory.

*SYMPOSIUM ON METACOGNITION*

**The influence of prior knowledge on category learning  
and metacognitive monitoring**

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The aim of the study was to investigate the influence of prior knowledge on classification accuracy and metacognitive monitoring during learning of two categories of verbally described imaginary animals. Each category member consisted of six features: five characteristic and one idiosyncratic. Characteristic features defined the empirical category structures, while idiosyncratic features activated consistent or inconsistent prior knowledge about predators and prey. Classifications of category members and single-features describing those members were examined. In Experiment 1 ( $N = 56$ ) categories were given meaningless names, so minimal prior knowledge could be activated only by idiosyncratic features. In Experiment 2 ( $N = 51$ ) categories were labelled as 'predator' or 'prey' in order to additionally activate prior knowledge. In both experiments the results showed an increase in accuracy as a function of learning blocks followed by an increase in judgments throughout the learning process. Furthermore, the results of Experiment 1 showed that, in the initial stage of learning, single-feature classification accuracy and confidence were influenced by minimal prior knowledge only when it was consistent. In both conditions, empirical category structures and prior knowledge interacted in the later learning process. The results of Experiment 2 showed that when prior knowledge is consistent, accuracy and confidence are strongly influenced by prior knowledge throughout the learning process. As a conclusion, metacognitive monitoring is found to be consistent with classification accuracy. Furthermore, when prior knowledge is minimal the results support an integrated learning view showing that empirical category structures and prior knowledge interact in the course of learning. When the activation of prior knowledge is strengthened by category labels, the results support the attentional focus view showing facilitated learning of knowledge relevant idiosyncratic features.

This work was supported by Grant 4139 from the Croatian Science Foundation and the University of Rijeka Research Grant 13.04.1.3.11.

**Determinants of confidence judgments in syllogistic  
reasoning**

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According to the self-consistency model of subjective confidence (Koriat, 2012), confidence judgments are related to the consensuality of the answer (the proportion of participants who choose the answer) rather than to its accuracy. In a domain of syllogistic reasoning, previous studies (Prowse Turner & Thompson, 2009; Shynkaruk & Thompson, 2006) found that reasoning accuracy and confidence were generally not correlated, and that confidence and accuracy were mediated by different variables. The aim of this study was to analyze differences in confidence judgments as a function of response accuracy and response consensuality. Participants were given booklets with syllogistic problems. They were instructed to produce conclusions, and after each task they were asked to make confidence judgments. All logically possible pairs of premises regarding mood of premises and syllogism figure were included. The obtained results strongly supported the predictions of the self-consistency model. For consensually correct syllogisms confidence was higher for correct than for incorrect answers, but for consensually incorrect syllogisms confidence was higher for incorrect than for correct answers. While item consensuality correlated positively with confidence, the correlation between item accuracy and confidence was not significant. However, for items with a consensually correct response, correlation between confidence and accuracy was positive, but for items with a consensually incorrect response correlation between confidence and accuracy was negative. The evidence obtained in this study supports the conclusion that similar patterns of relationships between confidence and accuracy established for different types of tasks (Koriat, 2012) also hold in the domain of reasoning. Confidence judgments do not monitor the actual reasoning performance, but they rely on different types of cues, which are also related to the consensuality of conclusions.

This work was supported by Grant 4139 from the Croatian Science Foundation and the University of Rijeka Research Grant 13.04.1.3.11.

### **Conflict and metacognitive judgments as predictors of analytic engagement**

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Research on conflict detection during reasoning suggests that reasoners are efficient at detecting conflict between heuristic intuitive responses and analytic considerations (De Neys & Glumicic, 2008). The aim of this study was to test the relationship between conflict, metacognitive judgments and analytic thinking. Forty six participants solved conflict, non-conflict and neutral versions of a base rate task. In each task, they were presented with two pieces of information, namely the prior probability (base rate) that an individual belongs to one of two groups and a person-

al description of a particular individual. They were asked to indicate, based on these two sources of information, to which group the individual most likely belongs. The two-response procedure was used (Thompson, Prowse Turner, & Pennycook, 2011): participants provided an initial, intuitive answer to the problem along with a Feeling of rightness, and were given as much time as needed to reconsider their initial answer and provide a final answer and final judgment of confidence. Although the proportion of base rate answers was lower for conflict than for non-conflict problems both for initial and final answers, the proportion of base rate answers for conflict problems was greater at Time 2 than at Time 1. Metacognitive judgments were responsive to conflict: participants were less confident in the accuracy of their initial answer for conflict and neutral problems than for non-conflict problems. There was no difference in fluency (response time for the initial answer) between conflict, neutral and non-conflict problems. Reasoners engaged more analytic thinking in response to conflict and neutral problems than in response to non-conflict problems: the probability of answer change was greater for conflict and neutral than for non-conflict problems, and the rethinking time was longer for conflict and neutral than for non-conflict problems.

This work was supported by Grant 4139 from the Croatian Science Foundation and the University of Rijeka Research Grant 13.04.1.3.11.

### **Conflict with conjunctions: Metacognition and response times in the Linda problem**

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Dual process theories of decision making distinguish Type 1 and Type 2 processes. Type 1 processes are fast, intuitive and commonly based on heuristics while Type 2 processes are slower, requiring analytical thinking. Pennycook et al. (2015) suggest a three-stage model of dual processing. Based on this model, Stage 2 conflict monitoring is crucial for determining whether Type 2 processing will be active. The level of conflict is expected to influence decision times and judgements of confidence for given responses. The goal of this study was to test the model using four versions of the Linda problem with varying levels of induced conflict. By varying the probability of presented options, it was possible to manipulate theoretical levels of conflict between answers and the given description. During the experiment participants ( $N = 31$ ) were presented with a short description of a person after which they had to choose the more probable of two options. The options were: a single situation, and a conjunction of situations which included the first one. As in the classic Linda problem the answer containing the conjunction was always less probable. However, it was predicted that participants would choose the answer which is more representative of the described person. The model pre-

dicts that lower levels of conflict would be associated with shorter decision times and higher metacognitive judgments of confidence. Results show participants reacted faster, and gave higher confidence judgements at lower levels of conflict. In addition, the participants were more likely to choose conjunctions when they were in line with descriptions, and single answers when the conjunctions were not representative. These results confirm predictions based on the model, and previous research on the Linda problem.

This work was supported by Grant 4139 from the Croatian Science Foundation and the University of Rijeka Research Grant 13.04.1.3.11.

### **Mental events in language and thought**

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The present paper reports three lines of investigation targeting the relationship between mental events and their expressions in language. First, we conducted two experiments on understanding privileged access to mental events by children. The specific research questions are the following: What is the relationship between understanding privileged access to mental states and theory of mind? When and how does the child acquire the attribution of privileged access to mental states? Privileged access is the idea that we have direct access to our mental states while we can form a representation of other people's mental states via their (verbal) behaviour. One of our goals in the experiment was to dissociate theory of mind from understanding privileged access. In our first experiment, we used two modified stories from the classic Bartsch and Wellman (1989) material in order to examine the development of generation of mentalistic action explanation and its relationship to understanding privileged access. In the modified versions of the experimental questions we specifically targeted the ascription of privileged access to mental states by preschool children. In the second experiment, we again modified one story by Bartsch and Wellman (1989) in order to reveal the understanding of privileged access in a task where the child had to understand the protagonist's first-person verbal report. In doing so the child was required to evaluate action explanations. Third, the final line of our research concerns the attribution of consistency of the belief system of another person. We examined the attribution of the following logical principle in children: If one believes that  $p$  and  $p$  entails that  $q$  then one should believe  $q$  as well. So, this experimental research revealed that the proper understanding of the mental event of believing occurs at the age of 6 and 7.

### **The relationship between the performance and assessment of L2 knowledge in ESL students**

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In studies of second language acquisition, second language (L2) learners are commonly assigned to different groups based on levels of proficiency in L2. The common classification criterion is learners' self-assessment of proficiency. However, the evidence on the relationship between the self-assessment of second language knowledge and actual task performance is scarce. We collected data on self-assessments of the knowledge of English as a second language (ESL) in order to test the relationship between objective and subjective measures of L2 knowledge. Furthermore, we were interested in the accuracy of assessment of L2 learners when assessing performance in different language tasks. In the first part of the study, participants completed: a questionnaire regarding their second language learning history, and an English vocabulary test. The objective measures were average school grades for English and test scores. The subjective measure was self-assessment of their L2 knowledge. We found that there is no correlation between school grades and self-assessed knowledge of L2 and test scores. In the second part of the study, two experiments were conducted. Participants had to name a picture or translate a single word. Two measures of performance were recorded: response time (RT) and accuracy (ACC). After completing each task, participants made assessments of their performance. Regression analysis showed that participants formed their assessments based on either RT, ACC or both, depending on the task. Furthermore, we tested the relationship between different measures of proficiency and performance. Test scores were significantly correlated with RT and ACC in both tasks, while their self-assessment of L2 correlated with RT and ACC only in specific conditions. School grades did not correlate with either measure. Our data suggests that self-assessment of L2 knowledge is not a good predictor of proficiency and performance in ESL tasks.

This work was supported by Grant 4139 from the Croatian Science Foundation and the University of Rijeka Research Grant 13.04.1.3.11.

### **Facilitating conceptual change in students' understanding of operant conditioning principles: The role of individual and cooperative learning**

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The aim of the present study was to examine the effects of individual and cooperative learning task on confidence

judgments and conceptual change. Specifically, the study explored whether misconceptions about operant conditioning diminish after students were learning individually or cooperatively about the key concepts in operant conditioning in Educational psychology course, and whether students become more accurate in their calibration. The participants in the study were 223 first-year graduate students. At the beginning of the course, students were asked to explain the similarities and differences between the various concepts related to operant conditioning, and they rated the confidence in the correctness of their answers. Additionally, they had to recognize principles of operant conditioning in several examples from educational settings, explain their answer, and rate their confidence in both the answer and the explanation. The same tasks were administered following instruction. Instruction consisted of the lecturer's explanation of key concepts and examples and, later on, students worked on 11 examples individually or in small groups. After finishing the tasks, students were informed of the correct answers through discussion. Students who participated in collaborative learning showed significantly better recognition of the principles of operant conditioning in the examples than students in the individual learning condition. Also, they reported higher confidence in the accuracy of their recognition answers compared to students who were engaged in self-learning. The two groups of students demonstrated similar levels of conceptual understanding of operant conditioning as evidenced in their explanations of the identified principles.

### **Metacognitive constructs in treatment of depressive symptoms**

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The importance of metacognitive constructs in the maintenance and treatment of psychological disorders is rising every day. Metacognitive models emphasise the importance of thinking processes, and thus represent a step away from traditional cognitive approaches. The content of thoughts is not as important as beliefs about thinking and strategies used to regulate and control thinking processes. This oral presentation will try to present a metacognitive approach in treating a depressive episode, through a case report. Assessing depressive rumination, and metacognitive positive and negative beliefs plays a central role in the recovery from depressive symptoms. A young woman who suffered from depressive symptoms, primarily depressive rumination, was engaged in treatment based on the metacognitive therapy model, after the diagnostic process. Treatment ranged ten sessions. Treatment started with case conceptualization. Socialization, attention training and detached mindfulness training followed. Challenging positive and negative beliefs was specially addressed. Treatment also included removing residual behaviours, reinforcing new plans for processing

and relapse prevention. Change in thinking processes and beliefs about it played a central role in this treatment. The content of thinking was not addressed. Single intrusive negative thoughts were seen as triggers of maladaptive thinking processes as rumination and worry. Through the recovery of this client it is possible to see how metacognition can play a central role in the development and treatment of depressive symptoms. The metacognitive approach facilitates a quick initial exit from a depressive state.

### *ORGANIZATIONAL PSYCHOLOGY*

#### **Increase of psychological demands at the work places in nursing**

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**Introduction.** Intensive health care and treatment demands highly available, flexible workers, able to take care of patients with a high level of proficiency. Due to the development of medicine, expectations of patients and their relatives have risen. Consequently, work place demands have increased and the number of work places in intensive health care has increased. Our research goal was the determination of work place demands for nurses in intensive health care, definition of their abilities to perform the same task for the whole working period, and identification of humanisation measures to keep work ability. **Method.** For identification of work place demands the Risk assessment tool developed by Črnivec and Molan was performed. **Analyses of working places** with the observation of workers in the real working environment of intensive health care units in University medical centre Ljubljana was performed by a team consisting of an occupational physician, an occupational psychologist and an occupational nurse in January 2016. **On the basis of the analysis, the main workplace demands were determined. Results.** The main psychological workplace demands for effective work of nurses in the intensive unit: Ability/trait Level General intelligence-adaptation: 4; Flexibility: 3–4; Memory span: 3–4; Precipitation of information: 4; Concentration: 4; Emotional stability: 4; Stress resistance: 4; Personal stability: 4. The level of demanded abilities is defined on the scale from 1–5, where “3” means average abilities and traits, “4” means ability and traits one standard deviation above the mean. **Discussion.** Due to increased work complexity and increased expected duration of work for 40 years and more it is difficult to expect adequate levels of nurses' availability entering the work place at the age of 30 (who are expected to work till the age of 70). **Determination of humanisation measures, supporting an ad-**

equate level of availability, for the whole working period, is the focus of our activities.

**Do the leaders' feelings count too? On the way of recognizing the relationship between leaders' felt trust and team effectiveness evaluation**

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Trust is the root of productive work relationships. Trusting—being willing to be vulnerable to the actions of other stakeholders under the belief that their intentions or behavior in relevant matters will be positive, and feeling trusted—the perception that another person is likely to accept vulnerability to one's actions, are two, but unique, sides of the same coin of a trusting relationship. The empirical evidence supported the notion that placing trust in employees, signals them that they are valued members of the organization and enhances their performance. However, we know little about the role of feelings of one important stakeholder—team leader, in team effectiveness. Thereby, this study aims to explore the relationship between leaders' felt trust and team effectiveness evaluation, using a multi-source sample consisting of 659 employees nested within 196 teams, along with 196 team leaders. The results of structural equation modeling point out that leaders' felt trust directly alters team effectiveness evaluation. In other words, when a leader feels more trusted, he or she evaluates team effectiveness more positively. Moreover, we examined the possible underlying mechanism between the latter. The results revealed that when the leader feels trusted by his or her subordinate team members, they share the perception of leaders' fair treatment, which enhances their work engagement and further alters team effectiveness. That is, because of the perceptions of justice climate and teams' work engagement, leaders' felt trust enhances team effectiveness evaluation. To put it differently, leaders' felt trust alters team effectiveness evaluation both directly and indirectly—via teams' justice climate and work engagement. Trustees sometimes may not feel trustors' trust—leaders may not recognize subordinates' trust—it may be internal and non-verbal. These results show that recognition has beneficial effects primarily on team effectiveness evaluation, but on justice climate and work engagement too.

**The role of fair treatment and work engagement in altering and hindering clients' (un)desirable behaviors: The academia context**

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Organizational scholars keep on highlighting the role of clients' attitudes and behaviors in organizationally relevant outcomes. Noteworthy, research often neglects these relations in the academia context. Might students' attitudes and behaviors be beneficial or harmful for the academia stakeholders: other students, teachers, and faculty as an organization? If we consider students as faculty clients, based on the research in the organizational context, it deems logical to expect an affirmative answer to the latter. This study aims to address the aforementioned interrogations, by extending the novel streamline of research, which are highlighting the role of clients in the organizational context, to an academia context. More specifically, this study explores the relationship between students' perceived justice, their work engagement and their (un)desirable behaviors towards their colleagues, teachers, and faculty. The results of the structural equation modeling, performed on a sample of 1513 students confirmed our expectations. Student perceptions of fairness from their colleagues and teachers alter student work engagement—the positive, fulfilling emotional state characterized by vigor, dedication, and absorption. That altered work engagement further enhances desirable student behaviors—captured in student citizenship behaviors—voluntary, self-driven behaviors that are beneficial to their targets, while diminishing undesirable student behaviors—encapsulated in counterproductive student behaviors—intentional behaviors aimed to harm their colleagues, teachers, and/or faculty. That is, fairness from teachers and colleagues perceived by a student, enhances desirable student behavior, and diminishes undesirable student behavior both directly, and indirectly by altering student work engagement. The results of this research provide valuable insights and implications for both science and practice, by highlighting the role of fair treatment and work engagement in altering and hindering students' (un)desirable behaviors.

**Individual and group achievement in creative business problem solving**

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Two studies investigated relationships among individual and group differences in the creative business problem solving. The first study examined the differences between individual and group achievement in the production of solutions in the creative business problem solving. The study was carried out on a sample of students of the University of Belgrade ( $N = 35$ ). We have developed a mixed research method – the embedded design. All participants solved the same complex business problem individually and collaboratively. Analysis of the results confirmed the initial assumptions: group production of the solutions were neither more creative nor more extensive than the individual production was. On the contrary, the standard solutions were favored by groups. The second study provided a test of the assumption that group creative problem solving can give better results but only under certain conditions. We hypothesized that ego strength and dominance/submissiveness may be important moderators of the creative group performance. The study was designed as experimental with the application of methods of quantitative and qualitative analysis. The study was conducted on a convenient sample of psychology students of the Faculty of Philosophy in Belgrade ( $N = 35$ ). The following instruments were used in the research: the Scale of dominance and submissiveness (Pantic, 1991), Cattell's Ego Strength Scale (Cattell, 1978) and the Test of creative problem solving (Bojanović, 2000). The negative effect of group compliance was found in the case of high imbalance regarding the ego strength of participants. The findings of this research can help in obtaining better knowledge of psychological mechanisms contributing to group success in creative complex problem solving. These results lead to the conclusion that ego strength and dominance/submissiveness may be important moderators of the creative group performance.

## POLITICAL AND EVOLUTIONARY PSYCHOLOGY

### Investigation of evolutionary determinants of ethnic discrimination tendencies

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The evolutionary outgroup male target hypothesis posits that intergroup discrimination, as a highly gendered phenomenon, is primarily directed at outgroup males and motivated by separate psychological systems for men and women. The purpose of this study was to test the assumptions of the outgroup male target hypothesis in the Croatian social context in which individuals of Serbian nationality represented the target outgroup. Accordingly, we examined the differences in discrimination tendencies against individuals of Serbian nationality depending on the gender of the agents and the targets of discrimination. In separate samples of male and

female participants, we also tested the moderating effects of several individual difference variables on the expressed level of discrimination tendencies. The study was conducted over the Internet, on a sample of 1077 participants of Croatian nationality. Participants generally expressed greater discrimination tendencies towards outgroup men than outgroup women, and male participants were more inclined to discriminate than female participants. Ingroup men also showed greater discrimination tendencies against outgroup men than outgroup women, while these tendencies were unrelated to target gender in the sample of ingroup women. Additional analysis of potential gender-specific moderators revealed that the tendency to discriminate against outgroup men is motivated by different individual variables for male and female participants: the interaction of personal aggressiveness and outgroup men's perceived physical strength in men, i.e., the interaction of fear of rape, perceived physical strength and attractiveness of outgroup men in women. These results provide a preliminary support for the outgroup male target hypothesis in the Croatian context and suggest additional factors influencing male and female ethnic discrimination tendencies.

### Intelligence and fitness: Mediating and moderating role of educational level

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Evolutionary status of intelligence is not clear: it is related positively with various indicators of fitness (physical health, longevity, sperm quality, fluctuating asymmetry), but negatively with reproductive success (RS) as a most important fitness marker. In the present research we explored the links between intelligence and three fitness indicators: number of children, number of grandchildren and age at first birth. Participants were individuals in a post-reproductive stage ( $N = 191$ , Mean age = 66.5 years, 65% females). Advanced Progressive Matrices-18 were used for the exploration of intellectual functioning ( $\alpha = .83$ ). Intelligence had a positive correlation with the number of children ( $\rho = .23, p < .01$ ) and age at first birth ( $\rho = .17, p < .05$ ) but a negative correlation with number of grandchildren ( $\rho = -.34, p < .01$ ). Participants' education turned out to be a significant mediator of the link between intelligence and criterion measures in a structural model. It partially mediates the link between intelligence and the number of children ( $\beta = .19, p < .01$ ) and fully mediates the link between intellectual functioning and age at first birth ( $\beta = .28, p < .01$ ) Furthermore, education was a moderator of the relation between intelligence and long-term RS: individuals with elevated cognitive abilities and a higher level of education had the lowest number of grand-

children ( $\Delta F(1, 188) = 4.40, \beta = -.15, p < .05$ ). Results showed that more intelligent individuals delay reproduction in order to gain resources like education, but it does not decrease their short-term RS. In fact, they have a higher number of children. However, their long-term RS is reduced, especially in individuals with higher levels of education. Differential associations of intelligence with short and long-term RS reveal adaptive trade-offs of intelligence which can contribute to the maintenance of its genetic variance. Results shed some new light on the possible role of intelligence as an evolutionary adaptation and highlighted the importance of measuring lifetime reproductive success in evolutionary research.

### Psychological determinants of political involvement

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Political involvement is an important aspect of civic engagement in contemporary societies. While political engagement can be understood as the readiness to act in accordance with one's political beliefs, political involvement is a more passive form of political behavior characterized by a passive interest in political issues. In this paper we explored what are the psychological, i.e., socio-demographical and attitudinal determinants of political involvement of citizens of Serbia. The sample consisted of 547 participants (63% female, age range 16-68 years, AM = 32 years). Political involvement was predicted based on a set of socio-demographic variables (gender, age, years of schooling, self-assessed SES) and the range of attitudes toward relevant societal topics: system justification, possibility to move up on the social ladder, political efficacy, illegitimacy of class differences, and class struggle. Hierarchical regression analysis showed that both socio-demographic ( $R^2 = .067, p < .001$ ) and attitudinal variables ( $\Delta R^2 = .176, p < .001$ ) explain a statistically significant percentage of variance of political involvement. Results indicated that among the first set of variables significant predictors of political involvement were gender ( $\beta = -.219, p < .001$ ) and SES ( $\beta = .123, p < .01$ ). Males and individuals with higher SES showed a greater interest in politics. Among the second set of predictors class struggle ( $\beta = .323, p < .001$ ), political efficacy ( $\beta = .178, p < .001$ ), and belief in illegitimacy of class differences ( $\beta = .094, p < .05$ ) gave a unique contribution to the prediction of political involvement. Politically involved individuals show readiness to fight for changes in power and status among social groups, they think people can influence political figures and their decisions, and perceive the existing class differences in Serbian society as illegitimate and unfair. The results of this study suggest that, in order to build a society of more politically active and more involved citizens, political education should be directed toward individuals with less social power and should teach citizens about the means of political change.

### What does it take to get people to be politically active? An effect of system justification and socio-economic status on online and offline political activism

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Civil and/or political passivity is a rising problem in contemporary societies, especially in transitional societies with relatively young democracies. Thus, answering the questions: what drives people to engage in political activism and which factors contribute to political activism, is of the utmost societal importance. The aim of this paper was to examine if justification of the existing social system and self-assessed socio-economic status (SES) contribute to readiness for three kinds of political activism: online political activism, offline partisan political activism and offline non-partisan political activism. The sample consisted of 547 participants (63% female, age range 16-68 years, AM = 32 years). Results showed that SES correlates with online activism ( $r = .084, p < .05$ ) and offline non-partisan activism ( $r = .104, p < .05$ ), but not with offline partisan activism ( $r = -.050, p > .05$ ). System justification is not related to any kind of political activism ( $r_s < |-.067|, p > .05$ ). Furthermore, we tested the hypothesis that individuals with higher SES will be more politically active if they perceive the system as unjustified, while individuals with low SES will be generally less politically active, regardless of how they perceive the system. There was no moderating effect of SES on the relationship between system justification and both kinds of offline political activism (partisan  $\beta = -.018, p > .05$ , and non-partisan political activism  $\beta = .017, p > .05$ ), but a moderating effect was marginally significant for online political activism ( $\beta = .047, p = .069$ ). Contrary to our hypothesis, simple slopes test revealed that individuals with low SES are more politically active online if they perceive the system as unjustified ( $\beta = -.15, p < .01$ ), while the effect was not significant in the high SES group ( $\beta = -.002, p > .05$ ). The results indicate that high SES individuals are generally more ready to engage in political activism, but individuals with low SES become more politically active online if they perceive the social system as unjustified. The results are also discussed from the perspective of slacktivism.

### Environmental and anthropometric predictors of sociosexuality

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According to life history theory, there is a consistent relationship between harsh and unpredictable environmental conditions and the development of the so called unrestricted

sociosexuality (early onset and more frequent sexual activity, with a greater number of sexual partners). However, it's only recently that the potential role of physical characteristics in the prediction of sexual behavior has been recognized. Hence, the present study introduced anthropometric parameters to the prediction of sociosexuality, with the assumptions that, along with environmental conditions, bodily characteristics should successfully predict sociosexuality and potentially moderate its relationship with environmental factors. The physical measures were provided by 218 participants (180 females) and included height and weight, from which Body Mass Index (BMI) was calculated. The sociosexuality scale was used to measure their attitudes toward sexual relationships and their sexual behaviors, while environmental factors were operationalized via presence of detrimental familial conditions in childhood: poor socialization and socioeconomic status. The analyses revealed gender as a significant predictor of attitudes toward unrestricted sexuality and sexual behavior, while BMI and poor socioeconomic status significantly predicted unrestricted sexual behavior. Moreover, several interactions occurred in the prediction of sexual behavior: BMI and poor socialization ( $\beta = .226, t = 3.49, p < .01$ ) and BMI and poor socioeconomic status ( $\beta = .272, t = 4.31, p < .01$ ), indicating that the levels of unrestricted sociosexuality are higher in individuals with higher BMI levels that come from poor familial, as well as poor socioeconomic conditions. Finally, an interesting, yet marginally significant interaction between gender and BMI ( $\beta = -.168, t = -1.78, p < .08$ ) showed more unrestricted sociosexuality among males with higher levels of body mass index. The overall results are not only in line with the assumptions of life history theory, but they also shed a light on additional factors that need to be taken into consideration.

#### PERSONALITY AND INDIVIDUAL DIFFERENCES

##### **The underlying cognitive constructs of dark personality traits: The Dark Triad and early maladaptive schema domains**

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Study of the Dark Triad has been booming recently in several fields of psychology. Although personality traits and behaviours of Machiavellians, narcissists, and psychopaths are well-studied, little is yet known about the underlying cognitive constructs. In this study, I investigated the association between the Dark Triad and early maladaptive schema domains (as potential underlying cognitive constructs). There were 503 adolescents (357 girls) who completed self-report measures of the Dark Triad and early maladaptive schemas. Results of a canonical correlation analysis revealed a common core for all Dark Triad traits (Impaired Limits schema

domain); a general maladaptive schema vulnerability for psychopaths and Machiavellians (positive association with all schema domains); and specific characteristics of psychopathic individuals (relative absence of Other-Directedness and Overvigilance and Inhibition schema domains). Results are discussed in the context of contemporary theories and critiques of the Dark Triad.

##### **Ego depletion in children: How the repeated involvement in self-control may result in lower cognitive capabilities like attention, executive functions and persuasion**

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Baumeister's Strength model of self-control defines self-regulation as a limited resource which can be depleted if used in excess. The status when ego-strength is lacking due to excessive use of self-energies is called ego-depletion. From the studies conducted it appears that repeated involvement in activities which require self-control is followed by worse performances in many domains like emotion regulation, attention, thought suppression, etc. The aim of our study is to test whether the excess workload impeded over children may result in the same ego-depletion effect similar to the one experienced with adults. For this end we tested children of 4th grade of elementary school (9-10 years old) utilizing flow-induction as a means to create an ego-depleted and a normal, not depleted group. We theorise that while involving in an activity with desire and enjoyment children don't have to regulate themselves so their self-energies would not get depleted. However, in the case when the activity is not so interesting and is above their reach of competence then children tend to use their self-energies to keep themselves involved with the activity resulting in an ego-depleted state. During the first part of the presentation the basic concepts of Baumeister's theory and the description of the flow induction method will be presented, while in the second part the research method and the analysis of the research data will be discussed.

##### **The vulnerable side of the Dark Triad: A multiconceptual analysis**

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The concept of the Dark Triad personality is a relatively new, contemporary way of describing the network of maladaptive personality traits. It's most important feature is the integrative view of the „dark” components of interpersonal relationships: the malignant self-absorption (narcissism), the manipulation of other people (machiavellianism) and the antisocial behaviours with the lack of empathy (psychopathy). In contrast with the further trait theory based person-

ality research, which examined these variables separately, the Dark Triad concept gives us an evolutionary psychology based theoretical framework, in which these constructs can be seen in their complex relationships. However, the theorists and researchers of the Dark Triad concept dealt with narcissism and psychopathy as unipolar constructs, not taking into account their phenotypical and theoretical complexity. In this study, we would like to demonstrate the potential „vulnerable” side of the Dark Triad concept, changing the formerly used grandiose narcissism and primary psychopathy to vulnerable narcissism and secondary psychopathy (or sociopathy). To examine the relationships between the concepts, we used newly adopted and validated contemporary instruments (e.g., the Maladaptive Covert Narcissism Scale) and a variety of statistical analytical methods (e.g., correlational analyses, multiple regressions and dense point analysis). According to our results, there is an empirical base of the „vulnerable” Dark Triad, but further research is required to clarify the empirical uncertainties.

#### **Longitudinal stability of coping styles in adolescence**

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The aim of this study was to explore absolute and differential stability of three coping styles (problem-focused coping, emotion-focused coping and avoidance) on a sample of adolescents in an interval of three years. Also, we examined gender, age and personality traits (extraversion, neuroticism and psychoticism) as moderators of absolute and differential stability. The sample consisted of 173 adolescents whose age ranged from 11 to 14 years in the first measurement. Results show that regarding absolute stability, problem- and emotion-focused coping significantly increased, while avoidance coping significantly decreased between two measurement points. Extraversion and Neuroticism were moderators of absolute stability of problem-focused coping style, with a greater increase of problem-focused coping in introverts and emotionally stable participants. Concerning differential stability, low to moderate correlations between two measurements have been obtained, the lowest for problem- and the highest for emotion-focused coping. The results show that all moderators had significant effects on differential stability of all three coping styles. Differential stability of problem-focused coping was higher in girls, younger participants, and those higher on neuroticism and psychoticism. Emotion-focused coping showed higher differential stability of coping among boys, older participants, those higher on extraversion and neuroticism and lower on psychoticism. Differential stability of avoidance coping was higher among girls, older participants and those higher on extraversion and emotional stability. The results are discussed in the context of normative developmental changes and various challenges occurring in adolescence.

#### **Dark Triad traits and assortative mating in mate retention: Variable- and couple-centered approach**

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Dating and married couples show positive assortative mating in many psychological characteristics such as attitudes, abilities, personality traits and behaviors. However, we know very little about the assortment in mate retention among couples. In the present study hypotheses regarding positive versus negative assortment, initial assortment versus convergence, and active assortment versus social homogamy for mate retention were tested on a sample of 100 heterosexual dating couples using variable- and couple-centered approach. Also, the effects of similarities in Dark Triad traits on assortative mating in mate retention were explored. The results obtained by using variable-centered approach showed a moderate to high degree of positive assortment for mate retention tactics, categories, domains and overall mate retention. Initial assortment hypothesis was strongly supported suggesting that couples were already similar in mate retention at the beginning of their relationship and did not converge over time. Furthermore, similarity in mate retention was not due to age and education as background variables, which is in accord with active assortment rather than social homogamy hypothesis. Hypotheses about positive, initial and active assortment in mate retention have also been confirmed using couple-centered approach, although some weak indicators for the social homogamy hypothesis have been obtained. Both approaches showed that similarities in mate retention categories, domains and overall mate retention were to a lesser degree a consequence of the similarities in Dark Triad personality traits, especially Psychopathy and Narcissism.

#### **Cardiac patients' illness perceptions and its effect on subjective well-being and health behaviour change**

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Background. Modifying unhealthy health behaviors is one of the most important factors during the rehabilitation of patients with coronary heart diseases (CHD). In influencing the beliefs, attitudes and therefore probably the behavior

of heart patients the role of illness perception is a possible significant factor. The purpose of this study was to examine the effect of illness perception on the health behaviour of patients with cardiovascular disease, as described in the Health Action Process Approach (HAPA). Methods. Seventy CHD patients were asked to complete our questionnaires on health behaviors (dietary behavior and physical activity), illness perception (Brief IPQ-R), health related quality of life/well-being (SF-12), and symptoms of anxiety and depression (HADS). All patients underwent a coronary artery bypass grafting (CABG) or percutan coronary intervention (PCI). They completed the questionnaires three times: in the hospital one week before the CABG/right after the PCI, two months and six months later. Results. Linear regression analysis revealed that consequences, identity, timeline, concern and emotions dimensions of illness representation predict the subjective well-being, anxiety and depression of CHD patients: more serious consequences, more symptoms, chronicity and the larger concerns and emotional response result in lower subjective well-being and a higher level of anxiety and depression. Concerning the after-surgery health behavior, personal control has a significant predictive effect on outcome expectancies, action self-efficacy, anticipated regret and action planning related to dietary behavior as well as physical activity. Conclusions. According to our results many dimensions of cardiac patients' illness representation significantly affect the subjective well-being, anxiety and depression of the patients. The perceived level of personal control over the illness influences in many factors the health behavior change. Therefore, assessing and modifying illness perceptions of cardiac patients are important key factors during cardiac rehabilitation.

### **Schizotypy as a core predictor of conservative ideology**

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Previous results indicated that social conformity operationalized through a combination of two personality traits, i.e., low Openness and high Conscientiousness, influences ideological attitudes. But, there are some indices that (sub-clinical) schizotypy could also be important for understanding ideology. This study investigated whether schizotypy positively contributes to the prediction of a set of measures of conservative attitudes independently of the HEXACO personality traits. Conservative attitudes were measured via five different operationalizations: conservative parties preferences, alphaisms (SDI-46 and LSA-S-60), ACT Conservatism scale and Conservation as dimension of human values). Personality was assessed by the six-factor model (HEXACO-60) and schizotypy by DELTA-10 inventory. The sample was collected via online survey ( $N =$

540). The results of hierarchical regression analyses showed that HEXACO Openness and Schizotypy were the strongest predictors of different conservatism indicators. Schizotypy explained 2-10% of additional variance of the criterions, above and beyond the HEXACO traits. The results suggest the important role of Schizotypy in understanding social attitudes, so it needs to be taken into consideration in future investigations of conservative ideology.

### **Political leanings and language: Right wing authoritarianism and prejudice in everyday speech**

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Previous findings demonstrated that political leanings, expressed in right wing authoritarianism (RWA), i.e., submission to authority, aggression toward outgroup and conventionalism, and both blatant and subtle prejudice have important relations with personality. Studies show that ideological attitudes, e.g., right wing politics, nationalism, prejudice and ethnocentrism are influenced by social conformity operationalized through a combination of two personality traits: low openness and high conscientiousness. Results about the influence of agreeableness and extraversion on RWA have not been unanimous: while some show that, in addition to openness and conscientiousness, RWA is affected by extraversion and not agreeableness, others demonstrate a significant role of low agreeableness, but not extraversion. Although surveys and experiments can provide very valuable information, some previous results indicate that data collected in a naturalistic environment, i.e., verbal behaviour, can provide new insights. To examine the expression of RWA and prejudice in everyday verbal expression, verbal behaviour of 40 participants was recorded over three days using the PDA devices with Electronically Activated Recorder (EAR). EAR samples snippets of ambient sounds in participants' immediate environment: every six minutes the device records 30 seconds of ambient sounds. Verbal output was analysed with Linguistic Inquiry and Word Count (LIWC2007). HEXACO was used for assessment of personality traits, while data for political leanings was collected on RWA and blatant-subtle prejudice scales. Obtained results show that personality traits, i.e., low openness, high conscientiousness and low agreeableness, are relevant for prediction of both RWA and prejudice, which is in line with previous studies. Results from hierarchical regression analyses show that indicators of verbal behav-

our have incremental validity over basic personality traits in prediction of RWA and both blatant and subtle prejudice. The results support the use of everyday verbal behaviour as a valid insight into socially relevant constructs.

### **(A)moral foundations of the social attitudes**

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Previous research suggested that the space of social attitudes could be optimally described by two dimensions. According to the dual-process motivational model (DPMM), RWA and SDO best represent these two related but distinct attitudinal dimensions. This model suggested that RWA and SDO have different socio-psychological bases. RWA derives from a belief that the world is a dangerous place, full of threats to both the individual and the group. In contrast, SDO derives from a belief that the world is a competitive jungle that creates a constant intergroup struggle for dominance and superiority. These fundamental assumptions also implied the question about moral foundations of these attitudinal dimensions. So, the general aim of this research is to investigate moral foundations both of RWA (ACT) and SDO dimensions, on three levels: level of general personality, level of amoral, antisocial traits (Dark tetrad traits), and finally, level of beliefs about human morality (Moral foundations level). This research was realized on a community sample ( $N = 540$ ). Data were collected on-line. The following was measured: RWA by the 36-item ACT scale, SDO by the 10-item SDO questionnaire, HEXACO personality traits by HEXACO-60, dark triad traits by The Short-Dark Triad questionnaire, sadism by the Short Sadistic Impulse Scale, and moral foundations by the Moral Foundations Questionnaire. Results showed that both SDO and RWA are determined by personality traits and moral beliefs, but SDO Dominance is rooted primarily in the personality domain ( $\Delta R^2 = .23$ ), while RWA dimensions and SDO Egalitarianism are rooted dominantly in the moral foundation beliefs system ( $\Delta R^2 = .21-.37$ ). From the domain of basic personality traits, Openness is the most important predictor of measured social attitudes; Honesty has an important role in the understanding of SDO. Dark traits are associated with all examined attitudes (positively with all except SDO Egalitarianism); they have the strongest association with SDO Dominance. Both SDO and RWA are associated with moral foundations – negatively with individual and positively with binding foundations, except SDO Egalitarianism, which showed a reverse pattern of associations. Data suggested that morality of binding foundations is questionable. Also, both conservative, i.e., RWA and SDO attitudes are rooted in amoral aspects of human functioning, but SDO is rooted more deeply in amoral personality structure than conservative, authoritarian social attitudes.

### **A darker shade of love: Machiavellianism and relationship satisfaction in dating couples**

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Several studies have examined Machiavellianism in the context of close relationships. We already know that Machiavellians are characterized by low warmheartedness (agreeableness), low emotional intelligence, reduced empathic ability and high neuroticism. The present study aimed to reveal the effects that these socio-cognitive and personality impairments have on the relationship satisfaction of Machiavellian individuals and their partners. Relationship satisfaction was measured by the positive and negative quality dimensions of two dual scales, namely, the Interpersonal Quality Scale (Murray et al., 1996) and the Positive and Negative Semantic Differential (Richard et al., 2013). In addition, the Interpersonal Risk regulation scales including Connectedness goals and Self-protection goals (Murray et al., 2006), the Investment Model Scale (Rusbult et al., 1998), the Trust in Close Relationship scale (Rempel, et al., 1985) and two Mach tests including the Mach IV scale (Christie & Geis, 1970) and the SDTMach (Jones & Paulhus, 2014) were administered to a sample of 101 dating couples with a mean age of 22.50 years ( $SD = 4.04$  years). The study explored links between Machiavellianism and relationship satisfaction. This means that Machiavellians' relationship experience is of low quality: they are dissatisfied with both their partners and their relationships. Self-protection goals, distrust towards the partner and an increased interest in alternative relationships also reflect their negative relationship attitudes. We used the actor-partner interdependence model to identify actor and partner effects in our sample. According to our results, several actor effects were revealed especially for men. Only a few actor effects of Machiavellianism for women and partner effects (for both genders) were found.

### *4<sup>TH</sup> EXPERIMENTAL PSYCHOLOGY DAYS IN RIJEKA: SENSATION AND PERCEPTION*

#### **Effects of gravity principle on contrast-dependent speed**

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At low speed and low contrast motion is, probably due to activation of a prior belief that objects move slowly, perceived as slower than at high contrasts. At higher speeds the effect is usually inverted (Blakemore & Snowden, 1999; Sotiropoulos, Seitz, & Seriès, 2014). Also, implicit knowledge about gravity enables higher precision of velocity change detection for downward motion (Moscatelli & Lacquaniti, 2011). This study aimed to investigate: (a) Are differences in the estimated speed between low and high contrast situations the same for different motion directions?

and (b) Can a slower speed prior be reduced for motion congruent with the effects of gravity? Targets moving along a path of fixed length were used as stimuli. Motion duration i.e., speed (1600 ms, 1800 ms, 2000 ms), axis (horizontal and vertical), direction (downward, upward, rightward, leftward) and contrast (four different intensities) were varied. Subjective evaluation of motion duration was registered with a time reproduction task – pressing a key when judging the elapsed time interval was equivalent to the preceding motion duration. The interaction effect of axis and direction was statistically significant - speed is estimated as the highest for vertical downward motion. Interaction effect of speed, axis and contrast was also statistically significant. For motion durations of 1600 and 1800 ms low contrast stimuli were evaluated as faster. For motion duration of 2000 ms high contrast stimuli were evaluated as faster. However, for motion duration of 2000 ms, no differences between axes in speed evaluation for the highest contrast situation were registered. Also, for motion duration of 1800 ms speed estimates for the lowest contrast situation were more accurate on the horizontal axis. It can be assumed that the gravity principle doesn't lead to annulment of contrast-dependent speed, but it has a global impact on the evaluation of speed as higher.

#### **Lightness of an object that moves through different illumination levels**

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Lightness of an object under two illumination levels is determined both by its parts that are covered by the largest and the highest area of illumination. This finding, just like the majority of findings in vision, was obtained in spatial domain. However, temporal changes also affect visual properties. Therefore, we introduced motion to examine the effects of temporal change in global and local areas of illumination on object's lightness. Ten participants took part in each of four experiments, always evaluating the same five gray targets. Position and area size of two illumination levels were varied across the experiments. In the first experiment participants provided two lightness matches for every target – one for each illumination level. In the other three experiments, the target moved several times between illumination levels, while participants provided object matches only after the target was hidden from their view. In Experiment 1 both illumination levels covered equal area size. Targets in the spotlight appeared significantly lighter than the targets in the shadow,  $F(1,9) = 15.703, p = .003$ . In Experiment 2, the largest local and global area of illumination was the shadow. Object match-

es were significantly different from the spotlight matches in Experiment 1,  $F(1,9) = 18.996, p = .002$ , but not from the matches in the shadow – thus confirming that both the local and the global area influence object color matches. The same result,  $F(2,14) = 8.415, p = .004$ , was obtained in the third experiment where the largest local and the largest global area was the spotlight. In the fourth experiment, the largest global area of illumination was the shadow, but the largest local area was the spotlight. When compared to Experiment 2, there was only a marginally significant difference ( $p = .059$ ). However, the direction of this difference (lighter matches in Experiment 4) suggests that both global and local area of illumination influence object color appearance. Obtained results revealed exact similarities and differences between the lightness effects in temporal and spatial domains.

#### **What is the basis of the Müller-Lyer illusion?**

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The Müller-Lyer illusion – the fact that a line with inward angles attached at its endpoints looks considerably shorter than an equally long line with attached outward angles – is one of the best known perceptual phenomena. One reason for its popularity is that it is very easy to construct but is very strong, and thus poses an intriguing challenge to our understanding of the functioning of the visual system, and also to our faith in its reliability as an indicator of the geometrical structure of the outside world. The effect was published more than 120 years ago, and although many theories have been proposed, it still does not have a generally accepted explanation. The most popular textbook account is based on the assumption that the visual system interprets such 2D line configurations as containing 3D depth cues which indicate that the two lines are positioned at different distances from the observer. A problem with such perspective-based theories is that the Müller-Lyer configuration looks flat and does not evoke any conscious awareness of depth. Therefore, such explanations imply that the 3D interpretation is triggered automatically and determines the percept unconsciously. I have tested this account by using as stimuli various 2D configurations which all contained the basic Müller-Lyer 'motive' in the form of angles, but either lacked any obvious 3D cues, or contained cues that evoked conscious 3D interpretations different from those assumed by the perspective-based approach. In several experiments using a number of such configurations it was found that they all evoked Müller-Lyer type illusory effects whose structure was very similar to effects evoked by the classical configuration, though generally somewhat weaker. Such findings challenge the notion that perspective interpretations provide a major contribution to the Müller-Lyer illusion.

### **Does illusory motion attract attention?**

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Akiyoshi Kitaoka has produced a number of very compelling static motion illusions. Previous developmental and imaging studies have implicated early visual mechanisms as underlying these effects. Such illusory motion might thus be expected to attract attention in the same way that real motion is known to do. In the current work, we used visual search and attentional cueing to explore this question. In Experiment 1, eight participants searched for an illusory motion target amongst a variable number of distractors (set sizes: 2, 3, 4). The illusion target was Kitaoka's Drifting Emboss Illusion and distractors were created by rotating the central insert by 90°, eliminating any impression of motion. We compared search for these full stimuli with control conditions in which only the original and rotated inserts were presented, without any surrounding frames. Search for the full illusion was very efficient, with target present slopes averaging 13 ms/item, compared to 98 ms/item for the control condition,  $t(7) = 5.4$ ,  $p < .01$ . In Experiment 2, the same participants completed a modified Posner cueing task. On each trial, the same illusion plus control were briefly presented at either side of fixation. Following a variable delay, a highly visible target letter appeared either to the left or right of fixation and participants made a speeded response using the relevant hand. Illusion cue validity and side of response were completely randomized. Consistent with the search data, targets that were validly cued by the illusion were responded to more rapidly (324 ms) than invalidly cued targets (336 ms),  $t(5) = 3.5$ ,  $p < .05$ . Together, these results suggest that illusory motion can efficiently guide attention, although further studies are required to generalize and extend these initial findings.

### **The rotated snow tire traffic sign illusion**

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Traffic signs B45 depict a chained tire signalling the need for suitable equipment in winter conditions on the road. The tire is vertically oriented within a blue circle. Previous research has shown that the circle is routinely perceived as being modestly distorted in a manner that visually „lengthens“ its horizontal compared to its vertical diameter. The goal of this study was to show that this illusion persists when stimuli are rotated by 90 degrees. The experiment was conducted using the method of constant stimuli in which

participants had to choose whether stimuli were distorted in the horizontal or vertical dimension. All participants completed three different situations: a blank blue stimuli (control), a blue circle with a white ellipse inside, and the sign itself. Points of subjective equality (PSE) were calculated from the data. It was predicted that participants would perceive the sign as distorted in the vertical dimension because of the rotation and that the PSE would be significantly different when compared to control stimuli. Analyses of PSEs show that participants perceive the sign as significantly distorted in the vertical dimension when compared to control stimuli, with the ellipse falling in between the two. The illusion was persistent despite stimuli rotation. It is suggested assimilation processes may underline the illusion with an open discussion on whether there is a contribution of the fact that the tire is perceived as three dimensional. Overall the results are in line with previous research on standard, unrotated stimuli.

### **Anisotropic Judas Mandala - perceived distance anisotropy in virtual reality**

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Distance perception is anisotropic in that sense that distances on the vertical direction, towards the zenith, are perceived as longer than physically equal distances on the horizontal direction. This anisotropy relies on multisensory integration from the visual, proprioceptive and vestibular system and it is explained through a relation between action and perception. The basic idea is that elongation of perceived vertical distances enhances action on that direction since it opposes gravity and therefore requires more effort than horizontal action. If perceived distance anisotropy depends on multisensory integration it is interesting to investigate whether it would appear in virtual reality displays, too. Also it would be interesting to see if anisotropy would change with increasing the number of depth cues on both viewing directions. We conducted two experiments on 17 participants, using a virtual reality display Oculus Rift DK2. Participants were sitting in a chair, wearing VR display on their head and their task was to equalize distances of two red spheres on the horizontal and vertical direction. Spheres were set on three standard distances 1m, 3m and 5m from the observer. In the first experiment the display contained only spheres in the dark, while in the second both spheres were positioned on a brick-wall-like background, providing several additional depth cues. Results from both experiments show a significant effect of stimuli distance (further stimuli are perceived as further), direction (physically shorter vertical distances are matched to physically longer horizontal ones) and interaction of the two (on further distances anisotropy is larger). There were no significant differences between the two experiments. We can conclude that verti-

cal distances are perceived as larger than horizontal ones in virtual reality displays, too. Also, adding depth cues to the scene and increasing perceived depth acuity did not change anisotropy of perceived distance.

### **Spatial coding of optical illusions: Do illusory magnitudes equate real magnitudes?**

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Both numerical and non-numerical magnitudes elicit similar spatial-compatibility effects (i.e., the SNARC effect), with small/large magnitudes associated with left/right hand responses, respectively. Indeed, Ren, Nicholls, Ma, & Chen (2011) showed that the physical size of a series of disks with different diameters elicits a SNARC-like effect analogous to that revealed for numerical magnitudes (Dehaene, Bossini, & Giroux, 1993). In the present study, we investigated whether the illusory size of optical illusions elicits the same spatial-compatibility effects revealed for physical magnitudes. To do so, we ran two separate experiments by using two different optical illusions: the Delboeuf illusion (Experiment 1) and the Kanizsa triangle illusion (Experiment 2). In Experiment 1, participants had to compare the relative size of two physically identical circles (targets) surrounded by two annuli (inducers) with different diameters. In the illusion, the target surrounded by the annulus with the larger diameter appeared smaller, and vice versa. Both stimuli were presented simultaneously, one on the left and one on the right side of the screen, and participants had to respond by pressing one of two response keys (left/right) in correspondence of the target that appeared smaller/larger, respectively. In Experiment 2, we created a series of illusory triangles and control figures by manipulating the distance and the orientation of the inducers. Participants had to judge, by using two response keys (left/right), the spatial orientation of the inducers. In both the experiments, no evidence was provided that the illusory size of optical illusions elicits spatial-compatibility effects similar to the SNARC effect. Conversely, reliable SNARC-like effects were revealed for the physical magnitudes of the inducers (i.e., size and distance).

### **Grouping stability and intentionality in direction of lightness induction**

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The relationships among perceptual elements in a visual field determine both contrast and assimilation phenomena: Perceptual differences are enhanced in contrast and decreased in assimilation. Gestalt psychologists raised an intriguing paradox by explaining both phenomena as the result of perceptual belongingness; in fact, Benary proposed that belongingness determines contrast, whereas Fuchs suggested that it determines assimilation. We propose that both grouping stability and grouping intentionality are related to this paradox. In four experiments we tested stable vs. multi-stable configurations and intentional vs. non-intentional ones, to verify whether contrast or assimilation will occur. We found that intentionality and multi-stability elicit assimilation; whereas non-intentionality and stability elicit contrast. Results are discussed within the previous literature on the relationship between lightness induction and perceptual belongingness.

### **The phantom gradient: Phenomenology of an illusion**

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At the retinal level, a spatial luminance variation can be the result of either a reflectance or an illumination variation. Usually, it is the global visual information that informs us whether it is one or the other; for example, when the profile of the luminance variation is sharp, it tends to be interpreted as due to a reflectance variation; while, when it is gradual, it tends to be interpreted as being due to an illumination change. Also luminance gradients that are almost unnoticeable may generate lightness illusions; in the present work, a number of manipulations of the original Agostini and Galmonte (2002) "Phantom illusion" have been investigated. To study the effect we used Kanizsa's (1954) phenomenological procedure. The hypothesis was that a target lightness could be differently affected by different widths/steepness of a surrounding invisible luminance gradient. Even if in all the configurations we tested gradients (both wide and narrow ones) made by an identical luminance range,

we demonstrated that wide almost invisible luminance gradients affect the target in the direction of contrast, while, quite surprisingly, narrower gradients give rise to assimilation. The main results of the present work are: a. narrowing the luminance gradient (i.e., changing its width/steepness), the contrast effect becomes assimilation; b. assimilation effects can arise not only from narrow surrounding homogeneous luminance areas but also from narrow surrounding luminance gradients; c. almost invisible gradients have the same effect as visible ones. To conclude, the appearance of either assimilation or contrast seems to be modulated by local surround width/steepness, even if maybe contrast and assimilation effects produced by gradients could be in some way peculiar.

### EDUCATIONAL PSYCHOLOGY

#### **Unto the third generation: Evidence for strong familial aggregation of physicians, psychologists, and psychotherapists among first-year medical and psychology students in a nationwide Austrian cohort census**

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Medical students present higher numbers of physician relatives than expectable from the total population prevalence of physicians. Evidence for such a familial aggregation effect of physicians has emerged from investigations in the Anglo-American (USA, UK, New Zealand), Scandinavian (Norway), and German-speaking areas (Austria, Germany). In particular, data from Austria (Voracek, Tran,

et al., 2010; in: Higher Education) suggest familial aggregation of the medical, as well as of the psychological and psychotherapeutic, professions among both medical and psychology undergraduates. However, these findings' database was limited to the capital city's universities (University of Vienna, Medical University of Vienna). Here, we extend prior related studies by presenting nationally representative data, encompassing all relevant (eight) public university locations in Austria (Universities of Graz, Innsbruck, Klagenfurt, Salzburg, and Vienna; and Medical Universities of Graz, Innsbruck, and Vienna). We investigate the familial aggregation of physicians, psychologists, and psychotherapists, based on an entire cohort census of first-year Austrian medical and psychology students ( $n = 881$  and  $920$ ). For both disciplines, we find strong familial aggregation of physicians, psychologists, and psychotherapists. As compared with previous results (Voracek, Tran, et al., 2010), directionally opposite time trends within disciplines emerge: familial aggregation of physicians among medical students has decreased, whilst familial aggregation of psychologists among psychology students has increased. Further, there are sex-of-relative effects (i.e., more male than female physician relatives), but no sex-of-student effects (i.e., male and female students overall report similar numbers of relatives for all three professions of interest). In addition, there are age-benefit effects; i.e., in this first-year student cohort, those with a relative in the medical profession are younger than students without, thus suggesting earlier career decisions. Discussed are implications of these findings (e.g., gender equity, feminization of the medical field), study limitations, and avenues for future research.

#### **The functional profile related differences in the homework activities participation in schoolchildren with cerebral palsy**

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The aim of this study was to examine differences in functional profiles of schoolchildren with cerebral palsy related to their participation in homework activities. Participation is operationalized through its frequency in the home environment. The sample consisted of 105 pupils with cerebral palsy from elementary ( $n = 90$ ) and high school ( $n = 15$ ) from the territory of the Republic of Serbia. To collect the data, Home Section of the Participation and Environment Measure for Children and Youth (PEM-CY; Coster, Law, & Bedell, 2010) was used. The functional profile included gross motor, fine manual and bimanual abilities, functional independence, data on the type of cerebral palsy, mobility aids use, cognition, sensory and communication

impairments, epilepsy and other types of health problems presence. Descriptive statistics,  $\chi^2$  test of independence and Mann-Whitney U-test for planned group comparison were applied. The results indicated that 16 (15.8%) pupils never participated in homework activities. Statistically significant differences with moderate to strong effect size were confirmed. Compared to participants who participated in these activities, spastic quadriplegia dominated among those who had never participated (62.5% versus 25.9%,  $p < .05$ ,  $V = 0.33$ ). A higher percentage of them used a wheelchair (87.5% versus 40.0%,  $p = .018$ ,  $V = 0.39$ ). Pupils who never participated in homework activities had more severe limitations of gross motor ( $p < .001$ ,  $r = .47$ ), fine manual ( $p < .001$ ,  $r = .43$ ), and bimanual abilities ( $p = .001$ ,  $r = .32$ ). The level of their functional independence was lower ( $p < .001$ ,  $r = .53$ ) than in those pupils who participated in homework activities. Similar results were obtained when cognition ( $p = .001$ ,  $r = .44$ ) and communication ( $p = .001$ ,  $r = .39$ ) were examined. Results demonstrated that there was no significant difference between pupils related to epilepsy and health problems. In order to better consider the possibilities of improving active participation in homework activities, it is necessary to supplement the educational profile of pupils with the functional profile.

#### Variability of results and prevalence of low scores on the WISC-IV-HR in normative Croatian sample

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The Wechsler Intelligence Scale for Children, Fourth Edition, WISC-IV (Wechsler, 2003; WISC-IV-HR, 2009) is one of the world's most commonly used measures of intelligence for children and adolescents. It has 10 core and five supplemental subtests, which are combined into four index scores and a total IQ score. So far, all of the knowledge and clinical experience with earlier versions of the WISC shows that there is a significant variability in test results for healthy children and adolescents on tests that consist of different subtests (battery of tests), and also that extremely low scores on these subtests aren't unusual. The aim of this study was to examine the variability of scale scores and the frequency of extremely low scores on WISC-IV-HR subtests and indexes for the Croatian standardization sample. Scaled scores on 10 core subtests and four indexes were included in the analyses. Participants were 1200 children (608 male) between 6 and 16 years and 11 months of age. The sample was stratified by age and county according to the population census. Information about parental educa-

tion was also gathered. Consistent with previous studies, frequencies of extremely low scores on some WISC-IV-HR subtests were related to lower total IQ scores and parental education. Also, healthy children and adolescents have an average difference of 7 scaled scores (2.3 *SD*) between their highest and lowest subtest. This demonstrates that healthy children and adolescents can achieve scores on some subtests that are indicative of cognitive impairment. It was shown that the probability i.e., frequency of extremely low scores on some WISC-IV-HR subtest or index is decreased with higher child or adolescent intelligence and with higher parental education level. So, we should be careful when interpreting the results because significant result variability is present even in results of healthy children and adolescents.

#### Psychosocial predictors of students' academic, social and emotional adjustment at the beginning of secondary school

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Transition to secondary school represents a period of great changes and challenges for students facing a new social and physical environment and growing academic demands. Successfully meeting these new demands is associated with students' educational progress and future adjustment, so it is important to explore psychosocial factors at the beginning of secondary school that could hinder or facilitate students' school adjustment. The aim of this study was to examine the predictive value of students' self-esteem, emotional competence, different forms of perceived social support and parental school involvement for their academic, social and emotional adjustment at the beginning of secondary school, while controlling for students' gender and type of secondary school (grammar or vocational). The participants were 410 first grade students (200 female), who reported their grade point average and completed the Quality of School Life Questionnaire, the Rosenberg Self-Esteem Scale, the Emotional Skills and Competences Questionnaire, the Social Support Scale and a Short Parental School Involvement Questionnaire. Hierarchical regression analyses showed that 19.1 to 29.2% of the students' academic adjustment can be predicted by the examined set of predictors, with sociodemographic factors being the best predictors of students' grade point average, and emotional competence and self-esteem the best predictors of students' self-perceived school achievement. The best predictor of social adjustment indicators (relationship with teachers and social integration in the classroom) and of general school satisfaction (an indicator of emotional adjustment) was emotional competence, while the students' perceived social support and self-esteem contrib-

uted mainly to social integration and negative affect (emotional adjustment indicator). Parental involvement had a small but significant contribution predicting students' grade point average and social adjustment. The examined set of predictors predicted in total 15.6 to 35.1% of the students' social adjustment and 19.1 to 23% of emotional adjustment.

### **The care of gifted and talented pupils in elementary school in order to well-being**

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The study applied the new designed questionnaire on the status and needs for gifted and talented students by authors Nikčević-Milković, Jerković, and Rukavina (2016) on a sample of 378 primary school teachers and teachers of different profiles (humanities, social, natural and artistic) from 19 primary schools in the Republic of Croatia. In addition to their profile, the teachers also differed on: a) years of service (less than 5, 5-10, over 10 years) and b) teacher education on working with gifted students (base-obtained during the study, further-while working at the school, self study and training, combined, none of the above). Factor analysis of the questionnaire obtained three factors: F1 - Special programs, forms and methods of work with gifted students ( $\alpha = .90$ ), F2 - Encouraging gifted students by the teachers, professional training and social care for gifted students ( $\alpha = .69$ ), and F3 - Identification of gifted students ( $\alpha = .78$ ). For these three factors we calculated basic descriptive data and inferential statistics in order to test differences among categories of teachers. Multivariate cluster analysis grouped teachers to the variables tested. The research was conducted within the three-stage theory by Renzulli and Reiss (2000). The theory emphasizes the importance of developing intrinsic motivation and creativity in order to fully develop productive talent in potentially talented children and youth. Teachers, along with the professional-development department and the school management, play a big role in this, because if they properly, innovatively and systematically organize the care of gifted children that can have direct and indirect effects on their well-being and quality of life.

### **Impact of irrational beliefs on self-esteem in students**

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According to the model of REBT theory, irrational beliefs can cause many dysfunctional emotional states. They frequently get re-established by implanting irrational beliefs, and therefore there is a potential threat of low self-esteem. Our goal was to determine whether there was a relationship between irrational beliefs and self-esteem, its direction

and the level of intensity in students. The sample consisted of 131 students from different universities in Serbia who voluntarily filled out the scales via the Internet. Irrational beliefs were measured using the Shortened General Attitude and Belief Scale (SGABS) and self-esteem was evaluated using the Rosenberg Self-Esteem Scale. Results of the research show that there is a significant negative correlation between the level of intensity of irrational beliefs and the level of self-esteem,  $F(1, 129) = 5.719, p < .05, R = -.206, R^2 = .042$ . Independent samples t-test showed a significant difference in the level of self-esteem among the sexes, which is lower in males compared to females,  $t(129) = -3.107, p < .05$ . ANOVA results show that students, depending on how they evaluate the importance of their grades during the studies, differ significantly with regard to the level of intensity of irrational beliefs,  $F(4) = 2.479, p < .05, \eta = .073$ , with the most common irrational beliefs in students who feel that their grades during studies are very important. Results confirmed the REBT theory hypothesis about the relation between irrational beliefs and self-esteem.

### *ART AND AESTHETICS*

#### **Attractiveness of male and female body: Preference for average or preference for supernormal?**

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The present study evaluated two hypotheses of human body attractiveness. The first is the "preference-for-average" hypothesis: average male or female body shapes are most attractive, because they are evolutionary most successful solutions for a certain population. The second is the "preference-for-supernormal" hypothesis: according to the so-called "peak shift effect", the most attractive body is more masculine or feminine than the average, because it additionally stresses the crucial physical differences between genders. Forty-seven participants of both genders participated in the experiment. They used a program for computer animation (DAZ 3D) to create (a) most attractive and (b) average male and female figures. Participants performed these tasks by adjusting the size of seven body parts of either male or female figures: shoulders, chests (for male figures) or breasts (for female figures), waist, hips, buttocks and legs. Analyses showed no main effects of participant gender. The effect of the task was significant for all body parts, except for the hips: compared to average, the most attractive male and female figures have broader shoulders, wider chests or bigger breasts, narrower waists and longer legs. Two significant interactions indicated that, compared to females, male participants created male figures with wider chests as most attractive, whereas, compared to males, female par-

ticipants created female figures with narrower waists. These results support the preference-for-supernormal hypothesis: all analyses have shown that both male and female participants created figures which are generally more masculine or feminine than the average ones. Interestingly, we found one deviation from this trend: the typical male characteristic such as broad shoulders was found to be an attractive feature of female figures as well.

This research was supported by the Ministry of Education and Science of the Republic of Serbia, grant number 179033.

### **Could music be figurative? The perfect match between music and visual arts is based on an a-priori categorization**

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Common sense and experimental research suggest that figurative art (fine arts: paintings, drawings, etchings, sculpture, and including photography) and classical music are a good match, whilst jazz is a much better fit for abstract art. However artistic avant-gardes often deliberately fused and confused the concepts 'figurative' and 'abstract'. This research deals with such concepts by asking two questions: (a) How do people classify visual art that can fit in either category? and (b) Can those concepts be extended to classify also music? In a two-session experiment (P, M), 24 people were first asked to classify 30 paintings (10 clearly figurative, 10 clearly abstract, and 10 ambiguous) as 'abstract' or 'figurative' and rate them for pleasantness (P). After the first part was terminated, participants were asked to classify 40 excerpts (15sec each) of instrumental music (20 classical, 20 jazz) as 'abstract' or 'figurative' (M). P-results: a gender effect for pleasantness ratings was found: females rated ambiguous and abstract paintings higher than males. Abstract and figurative paintings were correctly classified; only two ambiguous paintings were classified as figurative, all the others as abstract. This finding suggests a bias towards realistic renderings of same subjects: those with a higher degree of deviation from realism (thus making it harder to interpret the representation) are likely to be classified as abstract. M-results: no main effects or interactions determined significant effects in pleasantness ratings. More interestingly, results show an effect of music style on classification ( $p < .001$ ), showing that it is possible to classify music as figurative or abstract, independently on the match with visual artworks.

### **Subjective experience of poetry: Non-expert ratings of poems on expert selected adjectives**

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In a previous study we obtained notable differences between subjective experience of poetry in experts and non-experts. Experts' subjective experience was characterized by four factors: Opacity, Positive Valence, Evaluation and Emotionality. Factor structure for non-experts was not so stable and the only two factors extracted were Emotionality and Pleasure. However, the interpretation of these results was complicated by the fact that the same poems but different lists of adjectives (expert and non-expert selected) were administered to two groups of subjects. In this study, we wanted to clarify whether the previous results were caused by this use of different lists of adjectives or by a genuine difference in the experience of poetry between experts and non-experts. For this purpose, we tested a new group of 18 non-experts. They rated the same 20 poems from the previous study on five-point Likert-type scales, but this time they did so using the expert selected list of adjectives. A maximum likelihood exploratory factor analysis with Promax rotation and parallel analysis as factor retention criteria was performed on the collected data. After five iterations, 13 adjectives from the original list were excluded. The remaining 21 adjectives produced three factors which explained 59% of total variance. Factor eigenvalues were 2.43, 5.61 and 2.97, while their reliability indices were .82, .93 and .89. The retained factors we refer to as Opacity, Pleasure and Elegy. Although the obtained factor structure for non-experts was now stable and more akin to the experts', notable differences between the two groups were still visible. Specifically, the conspicuous lack of Evaluation as a separate factor in non-experts was observed once again, as well as the prominence of factor Pleasure. This could suggest that non-expert aesthetic evaluation of poetry, in difference to experts', may be an integral part of their positive subjective experience in reading.

### **Spin a yarn in the city: Textile street art from a Jungian approach**

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Textile-making has traditionally been an activity for women. They pursued it to feel joy by creating an ornament

that decorates the body or the environment. However, textile arts also have a transcendental role in women's lives: they provide opportunity for experiencing belongingness and a sense of wholeness (Futterman Collier, 2011). By knitting, weaving, crocheting, etc. women can join a collective female territory which has been preserved through generations in spite of the adverse conditions generated by mechanization. Using machinery for textile-making was a male takeover of a particularly feminine pursuit. Though it brought considerable advantages, the diversity and the personal nature of the textile works have become faded. Today a renewal of the handmade textile-art can be observed, which reflects a strong need for the tradition. It has started to expand from homes and communal places conquering streets and other public spaces and objects. The placement of textile artworks on the streets is called yarn storming. The present paper intends to analyze yarn storming as a branch of street art from the approach of analytical psychology.

#### *4<sup>TH</sup> EXPERIMENTAL PSYCHOLOGY DAYS IN RIJEKA: COGNITIVE PSYCHOLOGY*

##### **Proactive monitoring of regular sequences: An EEG time-frequency study**

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Monitoring is a family of executive functions that check, with different time-scales, the task over time for "quality control" in order to optimise behaviour. According to some views, monitoring would be independent of the cognitive domain (e.g., verbal, spatial) and mostly rely on right frontoparietal circuits. The present electroencephalography (EEG) study used both event-related potentials (ERPs) and event-related spectral perturbations (ERSPs) to verify: a functional difference between two types of monitoring processes, namely reactive and proactive; the effects of different task materials on their neurophysiological underpinnings; a domain-general right hemispheric asymmetry – at least at the scalp level. Twenty-four participants (8 males; mean age = 24 years, range = 21-35 years) performed a custom-devised tracking task in which the cognitive domain of the stimuli (verbal [VER] vs. spatial [SPA]) and the predictability of target occurrence (regular [REG] vs. random [RND]) were orthogonally manipulated. Monitoring was expected to be recruited more extensively in the predictable trials, in which the conditional probability of target occurrence was manipulated. The ERPs/ERSPs analyses confirmed the initial hypothesis that proactive monitoring is mediated by distinct tonic, dynamic cognitive processes as compared to the reactive one. In particular, the following REG-related electrophysiological effects were observed proactively before target occurrence: (a) an ERP over right frontal scalp locations, (b) a fronto-central theta ERS, (c) a slightly right-lateralized posterior alpha ERD, and (d) a beta ERD distributed bilaterally over vast regions of the scalp. Importantly, cognitive

domain did not interact with these effects. Taken together, the present findings suggest a functional dissociation between proactive and reactive monitoring and their domain-general nature, thus further contributing to our understanding of the different monitoring processes.

Funding: ERC grant #313692.

##### **The effect of nontemporal stimulus magnitude on duration estimations for three types of visual stimuli**

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Based on observed similarities between the domains of time, space and numbers and indications about the existence of a common processing mechanism for those domains, a theory of magnitude (ATOM) was proposed. The main proposal of that theory is that both countable and uncountable quantities can be represented as mental magnitudes. ATOM theory predicts that larger nontemporal stimuli are going to be judged to last longer than smaller nontemporal stimuli of equal duration. Based on these assumptions the main goal of this study was to confirm the existence of the positive effect of nontemporal stimulus magnitude on duration estimations with different types of nontemporal stimuli and different interval durations. Additionally, another goal was to determine whether the studied effect is stable in time. For this purpose, an experiment, in which a group of 44 participants (29 female) had a task to estimate duration of target intervals using a reproduction method, was conducted. Target intervals consisted of three types of nontemporal stimuli (numbers, square geometric shape, or group of dots) each of which was presented in two magnitudes (small and large) and in three different durations (800, 1000, and 1200 ms). Each participant performed the task twice with sessions a week apart from one another. The results revealed that larger magnitude of stimuli has been estimated as longer in almost all experimental situations. Obtained differences were not statistically significant for geometric shapes and numbers, but were significant for the number of dots. Effect sizes were moderate. The observed pattern of results was similar in the first and the second session for each of the three time intervals. ATOM theory provides the best explanations of the results obtained for the number of dots, and the weakest for the numbers.

##### **Deep structure of risky-choice framing tasks**

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The framing effect is typically demonstrated as preference reversal by using the risky choice task (RCT) which

consist of two options (risky and sure), equal in respect to their (expected) values. In the classic RCT (the so-called Asian disease problem), options also differed in respect to a number of complements – while the risky option has both complements (R1 and R2), the sure option has only one (S1). The study aimed to examine the influence of the deep structure of the risky choice task (RCT), namely type and number of complements, on the size of the framing effect in two domains (lives and money). Each of 36 tasks (9 types x 2 domains x 2 frames) was administered to a group of 50 participants ( $N = 1800$ ) with the instruction to opt for sure or risky option. Dependent variable was operationalized as the model behavior (MB), with value 1 for sure option chosen in the positive frame and risky option chosen in the negative frame, while the other two decisions were coded with 0. Number of complements was a significant predictor of the MB,  $\chi^2(1) = 13.51, p < .001$ ;  $\text{Exp}(B) = .76, p < .001$ . Regression function of the MB on the four RCT complements was also significant,  $\chi^2(4) = 20.26, p < .001$ . Complement S2 had significant ( $\text{Exp}(B) = .68, p = .001$ ), while R1 ( $\text{Exp}(B) = .81, p = .058$ ) and R2 ( $\text{Exp}(B) = .76, p = .059$ ) had marginally significant partial contributions to the function. These effects do not differ in the two examined domains ( $ps > .20$ ). The explanation could lay in the ambiguity of information about possible outcomes, represented through the deep structure. If presented options are complete, the frame will not affect the decision. Presence of complement S2, which was omitted in the classic RCT, significantly reduces the size of the framing effect.

### **The impact of air traffic control training on cognitive control strategies**

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Although flexible behavior relies on cognitive control, it would be implausible to assume that there is one general mode of cognitive control strategy adopted by all individuals. For instance, different reliance on proactive versus reactive control strategies could explain inter-individual variability. In particular, specific life experiences, like a highly demanding training for future air traffic controllers (ATCs), could modulate cognitive control functions. A group of 22 ATC trainees and a matched group of 20 university students were tested longitudinally on task-switching and Stroop paradigms that allowed us to measure different indices of cognitive control. In particular, by means of a cued task-switching paradigm, we measured mixing costs (repeat vs. single trials) and switching costs (switch vs. repeat trials), which reflect sustained and transient control processes. To distinguish proactive and reactive types of control, long and short cue-target intervals (CTIs) were used. Furthermore, resistance to interfering information and conflict resolution were assessed by color-word and spatial Stroop

task versions. The results showed that ATCs, with respect to controls, had substantially smaller mixing costs during long CTIs and a reduced Stroop interference effect. However, this advantage was present also before the training. Being more capable of managing multiple task-sets and less distracted by interfering events suggests a more efficient selection and maintenance of task-relevant information as an inherent characteristic of ATCs, associated with proactive control. Critically, the training that ATCs underwent improved their general accuracy and reduced response time switching costs during short CTIs only. These results indicate a training-induced change in reactive control, described as a transient process in charge of stimulus-driven task detection and resolution. This experience-based enhancement of reactive control strategy denotes how cognitive control strategies can be shaped by real-life training and underlines the importance of experience in explaining inter-individual variability in cognitive functioning.

Funding: ERC Starting Grant 313692 LEX-MEA to A.V.

### **Contraries stimulate insight in spatial problem solving**

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The importance of contraries in human cognition has been widely investigated in Cognitive Sciences. Contraries constitute a key structure in spatial perception (Bianchi & Savardi, 2000; Bianchi, Savardi, & Kubovy, 2011; Casasola, 2005, 2008) and studies in psycholinguistics, cognitive linguistics and semantics have emphasized the existence of an antonymic structure common to all natural languages (e.g., Croft & Cruse, 2004; Jones, 2002; Jones, Murphy, Paradis, & Willners, 2012; Miller & Fellbaum, 1991; Murphy, 2003). Contrariety is also fundamental to various other cognitive abilities related to reasoning, for example hypothesis testing (i.e., inductive reasoning; Evans, 2007; Gale & Ball, 2006, 2009, 2012; Politiek, 2001), deductive reasoning (Evans, Handley, Harper, & Johnson-Laird, 1999), divergent and productive thinking as applied to problem-solving (Branchini, Burro, Bianchi, & Savardi, 2015; Wertheimer, 1945) and understanding humor (Canestrari & Bianchi, 2012, 2013; Colston & O'Brien, 2000; Cundal, 2007). We carried out two studies in order to investigate the hypothesis that opposites/contraries/contrasts might be of

some help in overcoming impasses in visuo-spatial insight problem solving. In Study 1 (with 120 participants divided into 80 inter-observational groups), opposites acted as hints; in Study 2 (with 136 participants working individually and 120 in groups) there was a specific training program based on the explicit manipulation of contraries. The results demonstrate that contraries positively affected the search for a solution in terms of the number of correct solutions and the behavior of the participants. The use of contraries acted as a cognitive heuristic permitting perceptual constraints to be relaxed while at the same time expanding the search space in such a way that there was not a haphazard multiplication of attempts and the participants focused on properties which were relevant to the solution.

### Perceived task difficulty in mental set problems

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Mental set is the tendency to solve novel problems by applying the same procedure based on previous experience with problems of the same type even when a simpler procedure or a more efficient solution can be found. The aim of the study was to investigate the differences in perceived task difficulty depending on the given solution. We expected judgments of difficulty to reflect the implicit detection of the conflict between set and simpler solutions. We used the classical paradigm with water jar problems (Luchins, 1942). In the experimental group ( $n = 38$ ) participants solved a total of 15 problems as follows: ten set problems solvable by using a multi-step strategy, two critical problems solvable either by the multi-step strategy, or by a much simpler, single-step strategy, one extinction problem solvable only by the single-step strategy, and finally another two critical problems. The procedure for the control group ( $n = 40$ ) included only five final problems. After each solution, participants were asked to make a judgment of difficulty. In the experimental group, the results showed that the task was perceived as more difficult when participants gave a multi-step solution for the first critical problem in comparison with giving a simpler single-step solution. Furthermore, we analysed judgments in the critical problem occurring after the extinction problem, depending on solutions given for one critical problem preceding and the other following the extinction problem. The results showed that participants who solved both critical problems with multi-step strategies assessed problems to be more difficult in comparison with participants who applied simpler single-step strategies only after the extinction problem or with participants who gave simpler solutions to both critical problems. In the control group there were no differences in judgments of difficulty depending on given solutions. The results suggest that participants were sensitive to the conflict when giving the solution arising from their mental set.

This work was supported by Grant 4139 from the Croatian Science Foundation and the University of Rijeka Research Grant 13.04.1.3.11.

### Inhibition of content in syllogistic reasoning

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In typical syllogistic reasoning tasks, in which intuitive beliefs and logical considerations are conflicted, it is necessary to purposely neglect one's belief about content of the task in order to give the correct answer. Failure of the inhibition of content yields belief bias. However, the crucial question with respect to the nature of the proposed inhibition failure is whether errors occur because of the subjects' ineptitude to complete the task correctly even though they've, by default, engaged in inhibition of the content, or because (some) subjects fail to initiate an inhibition process at all. Our study was aimed to address this issue. Participants evaluated conflict syllogisms, followed by a lexical decision task. Target words in the lexical decision task were identical or core words from syllogisms and words semantically associated with them. Only those participants who solved all conflict problems correctly ("good reasoners",  $n = 21$ ) and those who did not solve any ("not so good reasoners",  $n = 17$ ) were taken into consideration. We compared reaction times on target words presented after the conflict syllogisms for two groups of participants. Results show that on target words good reasoners performed faster,  $F(1, 466) = 23.23, p < .001$ . Reaction times of the same sample of participants on the same stimuli in the lexical decision task without preceding the reasoning task did not differ. Compared with those rt's, the "good reasoners" group had lower rt's, while it was vice-versa for the "bad reasoners" group, whose rt's were longer in the same situation (simple main effect of Skill,  $F(1, 466) = 54.11, p < .001$ ). The findings propose that the process of inhibition of the content is indeed initiated when solving conflict syllogisms, but it was not equally efficient for the two groups of participants, that is that successful inhibition of content in the reasoning task co-occurs with facilitation in the latter lexical decision task.

### Autism as a connectivity problem: Categorization is a good candidate to understand more about autism

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Thinking in categories is a natural characteristic of humans. Categorization is needed for effective information processing: knowing and understanding the environment. There are perceptual, conceptual and social processes of

categorization. Probably, they have common regularities. We always try to group stimuli, objects, and people too. Generalization and differentiation are also key concepts in all of them. During the categorization process we are binding and integrating stimuli and features. The connection is realized through space and time. In the presentation I will talk about perceptual categorization and its link to temporo-spatial processing, and their relevance to autism. I apply two main theories: Gepner and Féron's Temporo-Spatial Processing Disorders hypothesis, and Bruner's perceptual readiness. While the first is a specific explanatory theory of autism, Bruner's theory has not previously been used in autism research. Based on Bruner's theory, I try to list some candidate processes in which differences can be found in autism: binding and integrating, selection of relevant cues, accessibility to categories, attentional screening processes. I also discuss the relevant empirical results about categorization in autism research. The lack or rigidity of perceptual readiness can be the first step to a plausible explanation of how a temporo-spatial processing disorder is tied to symptoms of autism.

#### **Skill acquisition in complex skill: Environment effects**

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The investigation of lawful relationships between learning and practice has a long tradition in cognitive psychology. This is especially prominent in the expertise studies, where different mechanisms of skill acquisition in the domain also produce different skill curves. However, there are only a few studies investigating how learning curves change for different birth cohorts. In the case of the current study, we utilize the German database of chess players to investigate developmental trajectories based on the year when the players were born. The German national database of chess players represents a fruitful ground for investigation of expertise-related processes, as it collects the data of over 150,000 players and spans over 30 years. The dataset records skill level (expressed by Elo score), age, and activity of the whole population of chess players in Germany. Here we used Bayesian mixture modeling to contrast most commonly used theoretical learning curves (e.g., exponential, power-law, logarithmic etc.), and adjust them for each birth cohort in the dataset. Results show that learning curves change considerably for each birth cohort. Namely, players born in late 1980s and the middle of 1990s observe a lower starting position. In other words, they start with a smaller amount of points compared with players born before the 1980s. However, younger players quickly catch up as they have a stronger increase prior to the peak compared to the players of older cohorts. In other words, the younger cohort increases and learns faster. The results possibly indicate enrichment of the environment for studying the chess skill (introduction of computerized chess learning and internet in

the 90s) and increase in the number of people playing chess as a professional and recreational game.

#### *SOCIAL PSYCHOLOGY*

#### **When stereotype threat makes me more or less intelligent? Evidence for the informative role of fear in effort mobilization**

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According to the mood-behavior-model (MBM) affect plays an important role in the evaluation of situational demands, which in turn may affect the effort mobilization. Studies have shown that negative mood as well as fear leads to overestimation of the task difficulty which increases effort mobilization on easy tasks. Conversely, when in negative mood, individuals perceive difficult tasks as even more difficult which leads to demotivation and demobilization of resources. The aim of the present research was to investigate whether the informative value of fear can explain the impact of stereotype threat (ST) in the context of intelligence evaluation. In Study 1 participants in ST or control conditions had to perform six easy tasks from Raven's Progressive Matrices. We also introduced an additional group without ST in which we induced fear by exposing participants to a horror movie. Consistent with expectations, participants in ST and fear conditions resolved more problems than those in the control group. In Study 2 we used a more stringent test of MBM by manipulating the informational value of affect. Thus, in addition to the standard ST and control groups, we also introduced another ST condition in which emotional influence was prevented using the misattribution method. As expected, participants under ST performed better than those in the control group but only in the standard ST condition (in which the emotions were informative). In Study 3 we used the same design but unlike Study 2, participants had to perform difficult tasks. Consistent with expectations, performance in the standard ST condition was lower than in the two other conditions. However, this was true only for participants with a low need for cognition. Taken together, our findings confirmed the assumptions of MBM and suggest that informative value of emotions could account for the effect of stereotype threat.

#### **Effects of personal and social uncertainty on conspiracy theories beliefs**

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Susceptibility to conspiracy beliefs can be defined as the general tendency to endorse theories blaming a conspiracy of ill-intentioned individuals or groups for important social phenomena (Bruder et al., 2013). Conspiracist ideation is more likely to occur when no definitive explanation for an event exists or the official explanation is evaluated as inadequate (Drinkwater et al., 2012). This research focused on comparing the effects of personal and social uncertainty on conspiracy beliefs. The research had two main objectives: (a) Selection of the most appropriate technique for inducing personal and social uncertainty, and (b) To determine in which way personal and social uncertainty affect the tendency to believe in conspiracy theories. In the pilot study, an imaginative technique (Scenery) and a modified version of the Velten emotion induction method were used to induce personal and social uncertainty. Induction was successful with the imaginative technique. In the final study, the imaginative technique (Scenery) was used to induce both personal and social uncertainty. Two instruments were used as measures of conspiracy theories beliefs: (a) Conspiracy Mentality Questionnaire (Bruder et al., 2013), and (b) Adapted version of Classical conspiracy scenarios (Pascal Wagner-Egger & Bangerter, 2007) – a list of vignettes containing a conspiracy theory. Results showed a statistically significant difference between personal uncertainty and control group in terms of belief in conspiracy theories measured through vignettes. Also, there is a significant difference between social uncertainty and control group regarding belief in conspiracy theories measured through vignettes. A statistically significant difference in level of beliefs in conspiracy theories between situations in which personal and social uncertainty were induced was not registered. We can conclude that uncertainty can lead to an increase in belief in conspiracy theories, but there is not yet enough research evidence to claim that different types of uncertainty can have different effects on conspiracy theories beliefs.

#### **Lay definitions of happiness in Croatia**

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The pursuit and achievement of a good life is one of the themes receiving increased interest in the last few decades. Researchers approach this problem from two distinct perspectives – hedonic and eudaimonic, which are more recently being questioned, resulting in more integrated research frameworks. In this research we used a mixed method approach, trying to explore qualitative aspects and quantitative ratings of happiness combining both perspectives, hedonic and eudaimonic. Participants were 245 adult participants (128 females), aged from 30 to 60 years, with a mean age of 43.76. The qualitative part of the study was based on the Eudaimonic and Hedonic Happiness Investigation (EHHI; DelleFave et al., 2011, 2016) questionnaire, where participants answered open ended questions about their defini-

tion of happiness, and rated their happiness in 10 specific domains (e.g., family, work) on a 7-point Likert scale. The quantitative part was conducted using the Satisfaction with Life Scale (Diener et al., 1995), short form of Positive and Negative Affective Schedule (Watson, Clark, & Tellegen, 1988) and short form of Mental Health Continuum (Keyes, 2005). The results indicate that the majority of happiness' definitions include several components. Most frequently reported categories were Personal life (27.45%), Family (19.76%) and Interpersonal relations (15.34%). Regression analyses showed that happiness with specific domains accounts for 35.8% of the life satisfaction variance and 30% of the hedonic balance variance. Finally, happiness with domains explains 27.2% of the emotional well-being variance, 20.9% of the social well-being variance and 25.6% of the psychological well-being variance. At the methodological and theoretical levels, findings emphasize the importance of combining qualitative and quantitative methods, in order to obtain a better picture of the studied phenomena, and to enable comparison of lay conceptualizations people have with theories developed by researchers.

#### **Comparing religious beliefs across the three monotheistic religions**

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The investigation of spiritual/religious factors in health is said to be clinically relevant and has already been verified in several studies and evaluations. The present article focuses on the application of the Multidimensional Inventory for Religious/Spiritual Well-Being (MI-RSWB; Unterrainer et al., 2010) on representatives of the monotheistic world religions. Although the MI-RSWB has been employed in several studies concerning religiosity/spirituality and mental health, no comparison of the three monotheistic world religions has been realised yet. Therefore, the present project tries to complement the previous findings in this field of research. The MI-RSWB conceptualizes religious/spiritual well-being in six dimensions of immanent and transcendent well-being. The immanent dimensions are Hope immanent, Forgiveness, and Experience of Sense and Meaning. The transcendent dimensions are General Religiosity, Hope Transcendent and Connectedness. The aim of the study was to examine whether or not there are differences between members of different monotheistic religions on the scales of Religious/Spiritual Well-Being that might arise from different or similar religious beliefs, values and assumptions. Therefore we analysed data from members of Christian, Jewish and Islamic communities in Austria and Germany. With regard to the differences between the religious groups we applied several types of ANOVA, MANOVA and ANCOVA. The first results of these analyses will be presented.

POSTER SESSION 1

**Uncanny Valley: Social distance and social anxiety**

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People in general prefer humanlike robots and toys but only until this similarity reaches near-identical resemblance. Such sudden decline in preference is described in the field of robotics as “uncanny valley”. One way to understand this face perception phenomenon is to investigate people with social anxiety. The same two groups of Psychology students (age 19-20) took part in the two experiments. The control group (13 participants, out of which four males) had a low score on social anxiety and the experimental group (13, two males) had a high score. In both experiments they estimated faces likeability (seven levels) and social distance (using Bogardus inspired scale). In the first experiment, the stimuli were morphed human and robot faces (on 8 levels). We measured a significant effect on likeability,  $F(9,1) = 15.345, p < .001$ , the human and human like morphs were preferred by all participants. The same result was obtained in the case of social distance,  $F(9,1) = 19.290, p < .001$ , with smaller social distance shown toward humans. There is a marginal statistical difference between the two groups of participants ( $p < .049$ ), with the control group always having lower average scores. Finally, we also measured the “uncanny valley” effect on both groups and with both of our measures. In the second experiment we compared human’s, robot’s and left and right symmetrical human faces. When it comes to likeability there is a difference between the four types of stimuli,  $F(3,1) = 6.361, < .001$ , with right symmetrical human faces being most likeable and left symmetrical faces the least likeable. The robot’s faces are preferred over human left symmetrical faces. Social distance produced the same pattern of results for the four stimuli,  $F(3,1) = 9.200, p < .001$ . The two groups seem to have very similar results except that the left symmetrical face is even less preferred by controls on both measures.

This research was supported by Ministry of Education and Science, Grants No. 179033 and III47020.

**Effect of anxiety on interpretation and judgmental biases**

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Some previous studies have shown that persons with social phobia have negative interpretations and judgmental

biases, not only for ambiguous, but also for positive and negative social events. Those biases are not found for non-social events. The aim of this study was to explore the effect of non-clinical anxiety on interpretative and judgmental biases towards social and non-social threats. Based on norms for the Anxiety Trait questionnaire (AT29), participants were grouped into those with low/average anxiety (41) and with high anxiety (37), and all filled out the Interpretative and Judgmental Questionnaire (IJQ). For testing the interpretative biases we conducted a combined analysis in which the between subjects factor was group (low/average anxiety and high anxiety) and within subjects factors were content of situation (social and non-social), situation type (positive, neutral, mildly negative and profoundly negative) and interpretation (positive, neutral, mildly negative and profoundly negative). Results showed that highly anxious participants tend to interpret both social and non-social situations as more mildly and profoundly negative compared to those with low/average anxiety. For testing the judgmental biases or overestimation of probability and cost of profoundly negative interpretations, we also conducted a combined analysis in which group (low/average anxiety and high anxiety) was the between subjects factor and content and type of situation were within subjects factors. Results were in line with interpretation biases and showed that highly anxious persons have interpretation and judgmental biases, but those biases are not content-specific.

**Mirror, mirror on the wall...: Can the use of mirror enhance behavioral differences between liars and truth tellers?**

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Results of previous studies have shown that people have a relatively poorly developed ability of discerning lies from truths. Therefore, some authors propose an active rather than a passive approach to detecting lies, which is based on imposing an additional cognitive load. Hypothetically, this should be a greater problem for liars, compared to truth tellers, because their cognitive system is already burdened with various tasks required for successful lying. The aim of this study was to test two hypotheses: according to the first one, behavioral signs of cognitive load should be more pronounced in participants who lie compared to those who tell the truth, and these differences should be even more pronounced when participants give their answers in front of a mirror than in situations without it. A total of 40 students participated in this experiment. Their task was to answer a set of questions related to their work experience in two differing situations. In one situation they had to answer questions about the job they truly worked in, while in another they had to pretend to have experience in a false job. Half of the students gave their answers in front of a mirror. All participants were instructed

to appear as trustworthy as possible and were motivated by promise of a reward. The results only partially confirmed the research hypotheses and are consistent with the findings of previous studies that dealt with imposing an additional cognitive load to increase the behavioral differences between liars and truth tellers. This research has shown that such an approach is promising, but it is necessary to further investigate and refine it for its successful application outside of the laboratory.

### **Cognitive consequences of bilingualism**

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Bilinguals show superior performance on various measures of cognitive ability. There is evidence for a positive link between second language proficiency and enhanced cognitive skills. Bilinguals exhibit behavioral advantages in executive functioning, particularly inhibitory control and selection, and because both languages of bilinguals are constantly active, bilinguals need to manage attention to the target language and avoid interference from the non-target language. 200 individuals participated in our study, Hungarian-monolinguals from Hungary and Hungarian-Serbian early bilinguals from Vojvodina. The tests for measuring executive functions are available in the Psychology Experiment Building Language system: non-verbal Stroop-test, Simon-test and Wisconsin Card Sorting-test. The results show that early bilingualism will give advanced executive functions, not just in childhood, but in adulthood too, which will provide an improved solution and execution in many tasks and problems, and with these results we can see the importance of bilingual education.

### **The effect of acoustic signals on spatial distribution of attention during free and task-guided scanning**

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The aim of this study is to answer the question, whether sounds on the edge position are able to maintain attention on the location marked by the sounds. We examined what rate of influence does the location of sound have on the distribution of attention in a visual search task and whether there is a difference in the scan of certain areas of stimuli depending on the acoustic stimuli's location. The distribution of attention on different areas was examined indirectly, with a recognition and recall task. We asked the subjects to pay attention to visual and acoustic stimuli, but they didn't get information about the future tasks, so they can freely scan the picture. The visual stimuli consisted of several drawn figures. During a one-minute long presentation of the visual stimuli, a constant, but not static acoustic stimulus (the re-

corded sound of a metronome) was presented continuously on either the right or the left side. The task of the subjects was to recall figures after the presentation (recall phase), and they had to decide on several images whether they were included in the visual stimuli, and they had to sort them by location (recognition phase). In this study we used two stimuli, containing 52-54 figures. In the second presentation, the participants didn't get any instructions, but they expected that they will have to recall figures. Thus, by comparing the two cases, the effect of acoustic signals on visual attention can be examined in the case of free scanning, and we can observe in what way the effect is altered in the case when the subject has a task.

### **An auditory illusion of numerosity**

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The solitaire illusion is an illusion of numerosity proposed by Frith & Frith (1972). In the original version, an apparent number of elements was determined by the spatial arrangement of two kinds of elements (black and white marbles). In our study, an auditory version of the solitaire illusion was demonstrated. Participants were asked to judge if they perceived more drum or piano sounds. When half of the piano tones were perceived as lower in pitch than a drum sound and the other half higher, piano tones appeared to be arranged in small units, leading to numerosity underestimation. Conversely, when all piano tones were perceived to be higher in pitch than the drum sounds, they appeared to be arranged in a single large unit, leading to numerosity overestimation. Similarly to the visual version of the solitaire illusion, the clustering seems to be determined by Gestalt principles. In our auditory version, a clear reversal of the illusion (numerosity overestimation/underestimation) was observed when piano tones appeared to be arranged in a single large cluster or in several small clusters, respectively.

### **Figural goodness and spatial composition**

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The figural goodness is an elementary visual/perceptual quality. It is not reducible the characteristics of the elements: the good shape - a simple, closed, stable, proportional, symmetrical, etc. The criteria for 'good' patterns - internal or external point of view - does not require any theoretical assumptions. Approaches to the perception of figures are external (eg. Gibson) and internal (eg. a constructivist, information processing, etc.). The figural goodness is also

the basis for aesthetic experience too: a source of aesthetic decision and aesthetic/emotional attitudes. In our research, we examined whether there is a difference between teaching students ( $n = 40$ ) without artistic training (control) and high school students ( $n = 20$ ) with artistic training (painter, sculptor) in some tasks on figural composition with simple geometric figures (javascript:ChangeTrDirection(%22textBox%22);circle, square, triangle)? The results showed that the results of control group based rather on laws of figural goodness (e.g., symmetry, balance etc.). In artistic students' decisions the figural goodness prevailed less, it seems the antecedent professional knowledge "overwrite" these. Our results confirm the multilevel function of the organization: javascript:ChangeTrDirection(%22textBox%22);the unique, first-rate pictorial elements (line, colour, structure) as a stimulation level, the secondary, highest level originating from the linking of the primary pictorial elements on qualities (e.g., complexity, balance) cross until the tertiary level: style, thinking, meaning.

#### **Pupil diameter and mental workload in visual search**

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Visual search involves identifying specific objects, called targets, among numerous other objects, called distractors. People are very good at visual search in everyday life – recognizing a friend among strangers in a bar is usually not a big problem. Visual search in some jobs, such as radiology or luggage screening at airports, is of great importance. The question of expertise in airport security may be a question of life and death. In order to guarantee a safe flight, one needs to notice dangerous objects in luggage. Exactly this is the job of airport security officers – spotting dangerous items among the wealth of other objects in images. Here we will measure pupil diameter to investigate whether the mental workload decreases or increases during the experiment. The participants in the experiment first get a brief introduction about dangerous objects and their appearance in the luggage when it is X-rayed. Their task is then to investigate presented X-rayed luggage and identify possible dangerous items among distractors. Pupil diameter will be measured with an eye tracker while the participants look for targets in the images. Changes in pupil diameter during tasks can be used as an indirect measure of mental activity because it is correlated with problem difficulty. There are two possible outcomes. The pupil diameter may decrease over time as participants evaluate more and more items. This could be an indicator that the mental workload declined over a greater number of stimuli because the participants have acquired a decent level of expertise during the experiment. The second possibility is that the pupil diameter increases due to increasing tiredness and effort. In this experiment we investigate both possibilities.

#### **The burden of knowledge – mental set in word-puzzle task**

Mario Graf, Merim Bilalić

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The Einstellung (set) effect is a well known phenomenon where an idea that comes immediately to mind prevents other alternatives from being considered. Like in the original water-jar experiment by Luchins, participants were given a series of problems where they had to find a word or a sentence in a random bunch of letters. That problem could be solved by a fixed method that they quickly learned. However, some could not solve an apparently similar problem for which the fixed method did not work. The Einstellung effect has been replicated many times, but the cause behind it is still unknown. We demonstrate that the participants experience the Einstellung effect because they fixate the elements that were helpful in the previous problems but are not relevant in the new problem. The participants who eventually find the right solution, slowly disengage their attention, as measured by eye fixations, from the irrelevant elements and start devoting it to the relevant elements. Our eye movement study demonstrates that the first idea that comes to mind directs our attentions towards the aspects that are relevant to itself and away from those that are not. The Einstellung situations illustrate a drawback of this otherwise efficient mechanism.

#### **Early auditory information is more effective than the visual one to predict ball speed in sport**

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In recent years, there is a growing interest towards the role of auditory information in sport. The majority of studies in this area focused on the use of sounds deriving from well-executed movements as a means to improve performance. On the other hand, just a few studies focused on athletes' response to sounds not deriving from the self, but that can however influence performance to a significant degree. The present study fits the latter perspective, as it aims to compare the role of early auditory and visual information in the prediction of ball speed in soccer and volleyball. To this purpose two experiments were carried out, in which participants had to predict the speed of kicked or smashed balls through a two alternative forced choice paradigm. The task was carried out in three conditions: Audio-video, Audio, and Video; in all the conditions, the auditory and/or visual information was temporally occluded at the moment of the impact between the foot/hand and the ball. Results revealed that for soccer, response accuracy was above chance in all three conditions,

with no difference among them; concerning response time, faster responses were observed both in the Audio-video and Audio conditions compared to the Video condition. For volleyball, response accuracy was above chance in all three conditions, and in the Audio-video and Audio conditions participants were more accurate than in the Video condition; concerning response time, the same results described for soccer were observed. The results suggest that for predicting ball speed in soccer and volleyball, early auditory information is more effective than the visual one. Further research is needed to evaluate if the same also applies to other sports. If that would be the case, new training paradigms could be developed and tested to find out whether they can be effective in improving athletes' performance.

### **The perception of domestic water consumption**

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The psychology of consumption is an emerging field of study around the world, which investigates the aspects related to the decisions or reasoning people make to buy goods. Moreover, the purchase or consumption of a good seems to be strongly dependent on the individual perception of that good, since it affects consumer's attitude. Psychophysical methods, such as magnitude estimation, have been used to investigate perceptual aspects of a large variety of goods (e.g., the perceived weight of different packages), but little attention has been paid to the perceptual experience of water consumption. Thus, the aim of the present study was to investigate the individual perception of water consumption, by using the magnitude estimation task in three situations: dynamic (Experiment 1), dynamic/static (Experiment 2) and static (Experiment 3). We recorded the jet of water from the faucet (Experiment 1) and the water jet in the sink (Experiment 2), manipulating both the water pressure (low, medium and high) and the duration of the recording (10 s, 20 s, and 30 s). Therefore, we created nine conditions, which were provided to participants three times. The participants were asked to estimate how many liters were supplied during each condition. In Experiment 3, instead, the participants were asked to stand in front of five containers with different dimensions, one at a time, and estimate how many liters were contained in them. These exploratory results will be crucial to guide future studies in the domain of domestic water consumption and consequently to promote a responsible and conscious behavior towards water waste.

### **Walking reduces the gap between encoding and sensorimotor alignment effects in spatial updating of described environments**

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Spatial updating allows people to keep track of the self-to-object relations during movement. Previous studies demonstrated that physical movement enhanced spatial updating in remote environments, but failed to find the same effect in described environments. However, these studies mainly considered rotation as a physical movement, without examining other types of movement, such as walking. We investigated how walking affects spatial updating within described environments. Using the judgement of relative directions task, we compared the effects of imagination of rotation, physical rotation, and walking on spatial updating. Spatial updating was evaluated in terms of accuracy and response times in different perspectives, and by calculating two indexes, namely the encoding and sensorimotor alignment effects. As regards response times, we found that in the imagination of rotation and physical rotation conditions the encoding alignment effect was higher than the sensorimotor alignment effect, while in the walking condition this gap disappeared. We interpreted these results in terms of an enhanced link between allocentric and sensorimotor representations, due to the information acquired through walking.

### **Watch out: An approaching right-hander is coming!**

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Previous studies showed that both right- and left-handed individuals exhibit an attentional bias towards the right arm of human bodies, likely because of the high prevalence - approximately 90% - of right-handedness in humans. Such a bias might imply an increased efficiency in monitoring both communicative and aggressive acts, the right limb being more used than the left in both types of behaviour. In this regard, our research group found that people are more likely to perceive ambiguous human silhouettes performing one-handed manual actions in an orientation congruent with a right- rather than left-handed movement, as well as front- rather than back-facing, which in turn could be due to the greater adaptive relevance of approaching compared to receding individuals. In the present experiment, participants were required to indicate as quickly as possible - by responding on a keyboard with the fingers of both hands - the movement direction (i.e., approaching or receding) of ambiguous silhouettes, the size of which increased or decreased to give the impression of a movement towards or away from the observer. Results showed that participants

responded significantly faster to approaching silhouettes and to silhouettes whose movement was congruent with a right-handed individual moving forward. In particular, participants' reaction times were faster when an approaching figure performed an action on the left rather than the right side (from the observer's point of view), and when a receding figure performed an action on the right rather than the left side. These results demonstrate once more that human observers are particularly responsive to (i.e., biased to perceive) right-handed and front-facing human figures, suggesting that adaptive pressures are able to shape even low-level perceptual processes such as movement direction discrimination.

### **Hemispheric asymmetries for face gender categorization in the disconnected brain**

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Hemispheric asymmetries in categorization of face gender were investigated by means of a divided visual field paradigm, in which female and male faces were presented unilaterally for 150 ms. A group of 60 healthy participants (30 males) and a male split-brain patient (D.D.C.) were asked to categorize the gender of the stimuli. Healthy participants categorized male faces presented in the right visual field (RVF) better and faster than when presented in the left visual field (LVF), and categorized female faces presented in the LVF better and faster than when presented in the RVF, independently of the participants' sex. Surprisingly, the recognition rates of D.D.C. were at chance levels – and significantly lower than those of the healthy participants – for both female and male faces presented in the RVF, as well as for female faces presented in the LVF. His performance was higher than expected by chance – and did not differ from controls' – only for male faces presented in the LVF. The residual ability of the split-brain patient in categorizing male faces reveals an own-gender bias lateralized in the right hemisphere, in line with the rightward own-identity and own-age bias previously shown in split-brain patients. The gender-contingent hemispheric dominance found in healthy participants confirms an already known right-hemispheric superiority in recognizing female faces, and also reveals a left-hemispheric superiority in recognizing male faces, adding important evidence of hemispheric imbalance in the field of face and gender perception.

### **Age and gender differences in food image evaluation**

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The main predispositions that constrain food preferences comprise the tendency to prefer sweet foods and to reject bitter foods, as well as to favor more familiar foods and reject novel foods. Much evidence indicates that the preference for sweet taste is inborn and universally present in neonates and that it decreases during adult life. However, there are no clear findings regarding age-related changes during adulthood and in the elderly. In the current study we aimed to assess, in a large sample of healthy participants, ratings of food images by taking into account valence, arousal and familiarity judgments. Our results demonstrate a clear pattern of sweet taste preference that seems to decline up to early middle age and to increase thereafter, so that it is again present in elderly people. Such a result could be accounted for by the fact that sweet foods might constitute a non-poisonous energy source and/or an immediate calorie supply for individuals with impaired energetic metabolism, providing new insights into the field of human food preferences. Moreover, gender differences were observed with regard to preferences for specific food categories.

### **Contextual effect on domestic chicks' short- and long-term habituation of freezing to a sudden acoustic stimulus**

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Animals show behavioural plasticity with both associative and non-associative forms of learning. Habituation, i.e., the decrement in the strength of a response to an irrelevant stimulus across repeated presentations, is often described as the simplest form of non-associative learning. In this sense, habituation relies exclusively upon the stimulus' features

and becomes, to some extent, stimulus specific. However, associative models of habituation have also been proposed, which posit that a stimulus-context association is established when a stimulus is presented repeatedly. Hence, habituation would be context-specific, and by changing the contextual cues habituation should not be transferred from one context to another. Nowadays, comparative literature on the role of context on habituation has provided mixed results, often varying across different species, as a function of the type of response considered, and suffering from the lack of control on non-specific augmented responsiveness to a new context. To help with shedding light on this fragmented picture, here we tested the habituation of the freeze response to a sudden acoustic distractor on domestic chicks (*Gallus gallus*). We took advantage of their innate propensity to rejoin an artificial imprinting object, so that animals that showed one minute of continuous running within a running-wheel placed 50cm away from the imprinting object underwent two habituation sessions in two consecutive days (Day 3 and 4 post-hatching). In each session, an acoustic stimulus (250ms white noise at 90dB) was presented five times at a pseudo-random interval between 30 and 60 seconds. Freeze response to the acoustic stimulus was measured for chicks that were tested, on the second day of training, either in the same or in a different context as compared to the first day of training. Results on the role of context in the short- and long-term habituation of the freeze response are discussed.

### **Hemispheric asymmetries in food-stimuli perception**

Valerio Manippa

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A lot of research has investigated hemispheric specialization for the processing of sensory stimuli. These include studies on patients with brain injury, neuroimaging methods, or behavioral paradigms based on the stimulation of only one of the two visual fields. For example, it seems that faces with emotional expression are processed predominantly by the right hemisphere. Food stimuli, as well as faces, represent a particular kind of stimuli that deserve to be investigated in this research field. We used a divided visual field paradigm (DVF) in which subjects had to recognize, with a key press, if the lateralized stimuli were food or non-food stimuli. These two categories were further divided into natural stimuli (i.e., non processed food, plants and animals) and transformed stimuli (i.e., processed food and artificial objects). Our study showed that food stimuli are better recognized when they appear in the left visual field than when they appear in the right one. This observation is consistent with the hypothesis of a specialization of the right hemisphere for the processing of food stimuli. We suggest the right hemisphere might be involved in the processing of salient stimuli such as foods and emotional faces. Furthermore, the recognition of transformed stimuli (both objects

and foods) is more accurate and rapid than natural stimuli, suggesting a more simpler cognitive processing of this kind of stimuli.

### **Facial symmetry and health: A meta-analysis**

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The aim of this study was to summarize empirical research concerning relations between facial symmetry and health. Initial review of the literature revealed that facial symmetry is an influential visual marker of attractiveness and health. We also observed that a strong connection between facial symmetry and health is demonstrated only in studies measuring perceived health, while there is only scarce evidence corroborating the link between symmetry and actual health. In order to systematically evaluate these observations, we conducted a meta-analysis with the type of health assessment (on two levels: perceived and actual) as a moderator variable. In order to select studies for the meta-analysis, several data-bases were searched for articles containing items “health” and “facial symmetry” or “facial asymmetry”. After this initial search, reference lists of retrieved articles were checked in order to find other studies relevant for the meta-analysis. Finally, articles that cited all the studies retrieved in the first two steps were checked. Following the described search procedure, a total of 19 studies were selected for meta-analysis: nine with actual and 10 with perceived health measures. The overall correlation between health and facial symmetry across all 19 studies was significant and positive ( $r = .23, p < .01$ ). Furthermore, the type of health assessment was a significant moderator, explaining the variation of effect sizes between the studies. The relationship between facial symmetry and perceived health was moderately strong ( $r = .33, p < .01$ ), while the correlation between facial symmetry and actual health was very low but significant ( $r = .07, p = .05$ ). In other words, this meta-analysis revealed that individuals with high facial symmetry are actually just slightly healthier but are perceived as much healthier than less symmetrical people, which is in line with the evolutionary hypothesis that a weak association between symmetry and genetic quality is sufficient to create a selection pressure to choose symmetrical mates.

### **Hemispheric asymmetries for reading in the seven music clefs**

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We investigated hemispheric asymmetries in a task of oral music sight-reading in a group of sixty-three musicians. Using tachistoscopic presentation, we were interested in testing the ability of the left and right hemisphere in a task in which it was required to read single notes written in the form of a musical notation on a staff. Before showing a musical sequence, a clef sign determined the pitch of the notes on the same staves. All musical clefs were presented: treble, soprano, mezzosoprano, alto, tenor, baritone, bass. Stimuli were presented either in the left (LVF) or in the right visual hemifield (RVF). We found a different pattern of hemispheric asymmetries in each clef condition. Specifically, performance in the soprano clef was significantly better when stimuli were presented in the RVF, on the contrary, performance in the baritone clef was significantly better when stimuli were presented in the LVF. No further significant results were found with the other clefs. Results suggest that the pattern of hemispheric asymmetries in music transposition could depend on the operation requested by the specific clef. This study sheds new light on the neural bases of music reading and more in general on the lateralization of cognitive processes.

#### **Are there judgmental biases in anxiety and aggressiveness?**

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Previous studies have shown that traits of anxiety and aggressiveness are related to judgmental biases. The aim of this study was to examine the effects of these traits on reaction time during judgment regarding the presence of a hostile act. Participants ( $N = 63$ ) judged a visual scene as hostile, non-hostile, or ambiguous. Each presented scene included two male actors and referred to one of the following situations: (a) a clear intention to harm another person, (b) a non-intentional incident, or (c) a combination of intentional and unintentional cues, which resulted in ambiguity. In addition, participants filled out the Anxiety Trait (AT29) questionnaire and the Aggressiveness Questionnaire AVDH. Instead of using a traditional analysis from the general linear models family, the data were analyzed with mixed-effect models which account for both fixed and random effects. Participants and stimuli were treated as random effects, while order of presentation, reaction time on previous stimulus, scene type, and personality traits were included as fixed effects. Results showed that judgment for ambiguous stimuli was slower in comparison to the judgment for hostile or non-hostile stimuli. The effects of personality traits and interactions between personality traits and scene type did not reach statistical significance. Interestingly, when

the random effect of participants was excluded, both anxiety and aggressiveness reached significance. However, this model had a worse fit than the one with a random effect of participants. Methodological and theoretical implications for studying judgment processes will be discussed.

#### **Development of the cognitive and metacognitive learning strategies questionnaire**

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In our presentation the development of the Questionnaire on cognitive and metacognitive learning strategies is described. The theoretical framework for designing the questionnaire was social cognitive theory, which emphasizes student's self-regulation as the basic process in the learning (Pintrich, 2004; Zimmerman & Schunk, 2004) and Zimmerman's cyclic phase model of self-regulated learning (1998, 2000) on the use of learning strategies before, during and after learning. The existing instruments, e.g., MSLQ by Pintrich et al. (1991), measure strategies in older students (high school and college students). Therefore, our aim was to develop a short, yet metrically appropriate instrument for assessing the use of cognitive and metacognitive strategies in primary school students. The questionnaire consists of two parts: the first part includes items for measuring cognitive strategies and the second one items for metacognitive strategies. It was validated in a sample of 247 students from 6th to 8th grade, 12 to 14 years old. First, we used exploratory factor analysis to determine the latent structure of both questionnaires for existing items and then we used confirmatory factor analysis to check the fit of the theoretical structure to empirical data of our study. The first part of the questionnaire yielded three factors, which consist of 13 items, explaining 56% of the variance: elaboration strategies, rehearsal strategies and the strategy of linking verbal and graphic material (Cronbach alpha coefficients for each factor are .80, .74, and .75). Confirmatory factor analysis showed a good fit of empirical data to the existing factor structure, RMSEA: .046, CFI/TLI: .957/.946, SRMR: .055. The questionnaire of metacognitive strategies also yielded three factors, consisting of 15 items, explaining 50% of the variance: planning and evaluation, monitoring and regulation (Cronbach alpha: .78, .63, .72). Confirmatory factor analysis showed a somewhat poorer, yet still acceptable fit of empirical data to the theoretical structure, RMSEA: .053, CFI/TLI: .915/.898, SRMR: .060.

POSTER SESSION 2

**Psychological aspects of suicidal ideas in adolescents**

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Appearance of suicidal ideas in youth lately represents one of the central topics of consideration in Bosnian and Herzegovinian society. Suicidality implies a wish for peace and death and motives for suicidal ideas and behavior connected to suicidal acts find their basic urge in the desire to achieve calmness, that is an invitation directed to other people, a feeling of hopelessness, being offended, deliberation from feeling of guilt, a salvation, as well as aggressiveness, an act of forced-psychotic impulse. Earlier research showed that helplessness, low self-esteem and feeling of hopelessness, together with guilt can be very significant in cases of suicidality in youth. Aiming to enter the problem of appearance of suicidal ideas in youth, we conducted a research that included 483 subjects (50.5% female), average age  $M = 17.35$ . Besides the Scale of Suicidal Ideas, we used various other scales (Scale of Depression, Scale Locus of Control, Scale Fear of Negative Evaluation, Scale of Aggressiveness) whose metric characteristics are verified in this as well in previous research. We determined that suicidal ideas significantly correlate with quality of communication within the family, with relations parents have towards an adolescent, social support from parents as well as from friends and professors. Suicidal ideas significantly correlate also with certain defense mechanisms, depression, anxiety, aggressiveness, self-respect, perceived incompetence, current problems (within the family, health issues, school achievements issues) and other. Using regression analysis with all variables, eight significantly contribute to the explanation of total variance of suicidal ideas, and those are: depression, current state of anger, social support from family, alienation and avoidance, as well as the dimension of post-traumatic reaction, problems concerning future, displacement as a defense mechanism, inward-directed aggression. These eight variables correlate with suicidal ideas,  $R = .647$ , and explain 41.9% of total variance of suicidal ideas. Received data do not represent only an image of adolescents prone to suicidal ideas, but point out directions of activity and priorities in providing help and support to young people, both formally provided by professionals in strengthening inner capacities of young people, as well as informally provided by other significant persons from the adolescents' surrounding.

**Intimate partner violence and emotional difficulties**

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Intimate partner violence has become a global health and development problem. The objective of this research was to determine the impact of intimate partner violence on the mental health of participants. Victims ( $n = 100$ ) and perpetrators ( $n = 47$ ) of intimate partner violence were compared with a non-abused control group ( $n = 200$ ) on their levels of depression, anxiety and stress. The Conflict Tactics Scales was used to assess the experiences of intimate partner violence. Emotional states were defined by scores on the Depression Anxiety and Stress Scale. In our study, results showed that participants who experienced any type of violence by their intimate partners had higher levels of depressive symptoms, anxiety and stress compared to participants that were violent toward their partner and non-victims. More research is needed to identify the nature of the association between violent behavior in partner relationships and mental health.

**Is there a real correlation between depression and sociometric position?**

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This thesis attempts to examine the connection between depressive mood and sociometric position in the sensitive period when an adolescent has changed school and will take a position in the new hierarchy. In the study conducted between 2013-14, the data from 601 adolescents (average age: 15.12,  $SD = 0.732$ ) were used. The thesis could not find any correlation between the points of choice and being chosen, and those of depression. A slight correlation can be indicated when the sample is separated according to school type: in the case of adolescents with presumably low SES, adolescents with higher depression points achieved a higher score in the 'trust' question group of the sociometric questionnaire.

**Emotional intelligence of young basketball players**

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Emotional intelligence is a current field of study in psychology. Emotional intelligence can predict success in important domains, among them personal and work relationships and navigation in the social environment. Emotional intelligence showed correlations with several 'positive' personality traits. Emotional intelligence, motivation, performance, ego orientation and extraversion were studied

in young basketball players, and non-athlete controls. This was the first part of a three-year-long longitudinal study based on a sample of 800 young athletes. The results were based on the Wong and Law Emotional Intelligence Scale and Eysenck Personality Inventory.

### **Investigating the effects of fear on a special population - a pilot study**

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Previous experimental and clinical evidence suggests that humans acquired a fear-module during the course of evolution. The fear-module is thought to be responsible for processing life-threatening cues that were relevant during evolution (e.g., snake); and carrying out a fast, automatic response to avoid serious consequences. However, it has long been debated whether this module is also responsible for processing and responding to modern fearful stimuli (e.g., a gun). Here, we propose a novel approach to this problem: We gathered a special population of 22 firemen from the Baramya Country Organisation for Rescue Services. Both modern and evolutionary old (gun and snake, respectively) cues served as targets in a classic visual search paradigm. We controlled for their arousal levels (medium, high), the context they are presented in (evolutionary modern and old) and the set size (number of pictures on the screen). Our results indicate that firemen found modern threatening cues faster than evolutionary old ones. In addition, when the target was evolutionary old, they found it faster among evolutionary old distractors than modern ones. When the target was modern, it was found faster in the smaller set size compared to the bigger one; and participants were also faster to find it among flowers than cell phones. These findings support the idea that the fear-module is responsible for processing both evolutionary old and modern stimuli. However, we claim that previous life experience and context are important factors that determine which one has a slight advantage.

### **Identity status and narrative construction**

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Most socialization literature (Erikson, 1968; Marcia, 1966; Papini, 1994) stresses the importance of individual and social functions of socialization, which serve psychological and social well-being. While the individual function of socialization enhances personal agency: a unique and differentiated sense of self, social function, on the other hand, emphasizes the sense of communion with others. If the balance between the process of interpersonal differentia-

tion and integration is broken down it can lead to different social dysfunction. The aim of the study was to examine the relationship between ego-identity status and narrative production. We were especially interested in whether narrative compositions can be corresponded to certain identity states. Participants completed the Hungarian adaptation of the Extended Version of the Objective Measure of Ego Identity Status (EOMEIS-2; Bennion & Adams, 1986) designed to measure ideological and interpersonal identity and the Differentiation of Self Inventory (Scowron & Friedlander, 1998). After completing the tests participant were asked to finish two conflict invited episodes. Narratives were content analysed with NarrCat (László et al., 2014) and compared with the tests results.

### **Psychosocial rehabilitation in schizophrenia: A short term longitudinal study**

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The main goal of rehabilitation is to enable patients with chronic mental disorders to live an autonomous life in their own homes, receive proper education, get involved in meaningful work, in social and intimate relationships, and fully participate in all other aspects of social life. Most of these persons, however, struggle with residual symptoms, cognitive deficits and psychosocial problems. The effectiveness of institutional therapies is reduced if only the clients receive treatment, and the social environment remains unaffected. Introducing a complex, integrated approach into social care, involving families and concerned others as potential resources could bring more benefits. Clients should be enabled to solve everyday problems, manage stress and learn everyday skills. The present study investigated the efficacy of a 6-month program at the Community Psychiatric Institute of Pécs (community psychiatric service and psychiatric day care) with regard to psychiatric symptoms and difficulties with daily living experienced by patients with schizophrenia and a control group. The subjects were 90 patients who met the diagnostic criteria of the 5th edition of the Diagnostic and Statistical Manual for schizophrenia and continued DC treatment for 6 months. We used the Camberwell Assessment of Need (CAN-R-HU), which is a comprehensive needs assessment tool and the GAF scale. CAN-R-HU assesses need in 22 areas: accommodation, food, self-care, looking after home, daytime activities, physical health, psychotic symptoms, information about condition and treatment, psychological distress, safety of self and others, etc. In conclusion, psychosocial rehabilitation is an even more important facilitator in the adjustment of patients, as

they move from institutional settings to the community, improving their quality of life, way of life, social functions, social support, and psychological problems.

### **Development and validation of the academic engagement scale**

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Research has shown that student engagement is an important predictor of various educational outcomes (e.g., academic achievement, school dropout) and, because it is a malleable state that can be shaped by contextual influences, it is increasingly recognized as a possible goal for improving learning. However, there is no brief and validated measure of engagement in higher education in Croatia. Therefore, the 15-item Academic Engagement Scale (AES) was developed in accordance with the multidimensional conceptualization of engagement (Fredricks, Blumenfeld, & Paris, 2004), including behavioural engagement (participation in academic activities), cognitive engagement (investment in meaningful learning) and emotional engagement (affective reactions). Therefore, the AES comprises of three subscales: behavioural, cognitive, and negative emotional engagement. The authors presented development of the scale and examined the structural validity, internal consistency, congruent and discriminative validity of the scale. To this end, the results of validation studies using Croatian samples of university students were shown. The scales demonstrated adequate reliability and structural validity. Additionally, the AES subscales were predictably associated with educational and motivational constructs, and AES-based engagement profiles were predictably associated with academic burnout and flourishing, thus showing evidence of both congruent and discriminative validity. This study is an important addition to research on engagement because it provides support for a multidimensional model of student engagement in the context of higher education. Also, these results support previous findings that engagement is associated with positive educational outcomes.

### **Social cognition and narrative construction. Effect of cognitive complexity on understanding of historical events**

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Collective victimhood denotes a belief shared by group members that a perceived harm committed by an outgroup was undeserved and an unjust one that the group was not able to prevent (Bar-Tal et al., 2009). When the sense of collective victimhood is based on the experience of accumulated harms it will be embedded in the group's identity and be-

comes an integrative part of collective memory. Historical collective victimhood (Schorl-Eyal et al., 2014) may contribute to the maintenance of a positive group identity by placing the group in a morally superior position and affect the judgement of intergroup conflicts (see László, 2014) even in those intergroup conflicts where the ingroup takes the perpetrator position. Collective memory of Hungarian historical events reflects the characteristics of collective victimhood. The present study attempts to explore the effect of individual factors, such as the complexity of mental frames on understanding of intergroup conflict. Individuals showing high cognitive complexity are less dependent on simple social cognitive schemas (Hale & Delia, 1976; Shepherd & Trank, 1992) because understanding a social situation in its complexity prevents cognitive shortcomings or biases in social evaluation. We assumed that individuals with high cognitive complexity will be less likely to adopt an exclusive view of collective victimhood, more likely to show guilt for the ingroup harms committed in the past and this pattern will be represented in their narrative composition. Participants ( $N = 75$ ) completed the Hungarian adaptation of collective victimhood scale (Vollhart, 2012) and the collective guilt scale (Csertő et al., 2014). Cognitive complexity was measured by the modified Repertory Grid Test (Bieri et al., 1966; Kelly, 1955). Subjects were also asked to provide a written account of Trianon Peace Treaty and Holocaust. Narrative compositions were analysed by the NarrCat system for automatic content analysis (László et al., 2013).

### **Cognitive, emotional, and socio-cultural factors: Influences on the academic achievement in second and fifth graders**

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Several studies on both adults (Ackerman, Beier, & Boyle, 2005) and children (de Abreu, Conway, & Gathercole, 2010), show links between working memory (WM) and level of intelligence. Furthermore, these constructs are strictly related to academic achievement (Alloway & Passolunghi, 2011). Intelligence and WM are considered the main cognitive predictors of scholastic success, but educational outcomes are also influenced by the socio-familial background (Murdaca & Nuzzaci, 2015) and anxiety, particularly that experienced while carrying out arithmetic tasks (Caponi, Cornoldi, Falco, Focchiatti, & Lucangeli, 2012). The aim of this research was to identify if and to what extent do the cognitive, emotional and socio-cultural factors affect academic achievement, considering different developmental phases. Two groups of participants were involved in the study: 60 second graders (mean age about 7) and 70 fifth graders (mean age about 10). In the first

step of data collection, assorted tests for WM and level of intelligence were administered. In the second one, questionnaires for investigating both math anxiety and socio-familiar background were presented to the participants. Lastly, the National Evaluation System tests on math and Italian were given to both groups. The data obtained were analysed by means of correlations and multiple-regression analysis models. The results suggest that the cognitive variables mainly affect the performances of scholastic learning tests in the second graders, whereas the socio-cultural and emotional factors principally influence scholastic outcomes of the fifth graders.

### **The impact of gender-related traits on the adjustment to coronary heart disease**

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Previous studies suggest that gender-related traits have an impact on the adjustment to chronic illnesses. Agency (A) and communion (C) predict better health outcomes, while unmitigated agency (UA) and unmitigated communion (UC) are associated with physical and mental adjustment difficulties. The aim of the study is to evaluate the role of gender-related traits on adjustment to coronary heart disease. Evaluating the baseline (T0) and the 2 months (T1) and 6 months (T2) follow-up data of our longitudinal study we examined 213 acute coronary syndrome patients' (70% male,  $M = 60.32, SD = 10.42$ ) data. We used EPAQ, RUCS, Bref-BFI, COPE-B, social support (MSPSS), ZTPI for assessment. Sex differences emerged in smoking, unhealthy diet and UA in favour of men. High UA is related to neuroticism positively, while A is related to neuroticism negatively. A is a negative predictor of depression,  $b = -0.335, p < .005$ , while UA is related negatively to social support at baseline. After 6 months patients' depressive symptoms increased and their quality of life decreased. As regards coping styles, active coping and denial decreased through 6 months but humour increased. Positive health behaviour (healthy diet, physical activity) increased. A related positively to the health behaviour changes, while UA did negatively. The increase of depressive symptoms during 6 months was negatively associated with UA and positively with A. Our results show that 6 months after an acute coronary event patients' depressive symptoms and quality of life became worse, while their positive health behaviour improved. The relationship between gender related traits and the changes in adjustment suggests that it is worth to consider its risky or resilient effect. Understanding the effect of these traits on adjustment should allow us to create specially tailored psychosocial intervention programmes during the rehabilitation.

### **Personality traits as predictors of consistency and situational variability in learning motivation**

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Previous research has extensively documented the existence of correlations between personality traits (as defined in the Big Five taxonomies) and various forms of learning motivation – especially achievement goal orientations (e.g., Judge & Ilies, 2002). However, socio-cognitive models of self-regulated learning (e.g., Pintrich, 2003) emphasize situational specificity of the learning process, including the reasons for engaging in that process, i.e., learning motivation. Previous findings provide evidence for both stability and change in learning motivation across different tasks (e.g., Muis & Edwards, 2009) and time (e.g., Mujagić, 2012). Since personality traits by definition account for consistent behavioral, emotional and cognitive patterns, the aim of this study was to explore the role of personality traits in the prediction of consistency in learning motivation across two measurement occasions. At the same time, some authors suggest that personality traits may account for changes in motivation as well (e.g., McCrae & Lockenhoff, 2010; Sansone, Thoman, & Smith, 2010). Hence, it seemed viable to explore the role of personality traits in the prediction of changes in learning motivation as well. Data on subject-specific levels of intrinsic and extrinsic motivation were collected on two occasions from 297 participants. Data on personality traits (consciousness, extraversion, neuroticism, agreeableness and intellect) were collected only once. Hypotheses about the effects of personality traits on consistency and situational specificity of learning motivation were formulated under the latent state-trait theoretical framework (Steyer, Ferring, & Schmitt, 1992) and tested by means of structural equation modeling procedures. Personality traits were not significant predictors of latent variables representing intraindividual changes in motivation. However, intellect, neuroticism, and agreeableness had significant effects on the dispositional component of intrinsic motivation. These three traits explained 15% variance of stable interindividual differences in intrinsic motivation. Intellect and neuroticism explained 6% variance of the dispositional component of extrinsic motivation.

### **Parental relationship adjustment and mood symptoms over 10 years**

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Depression and anxiety are large contributors to the global burden of disease in Europe. Poor relationship adjustment

is a key risk factor for depressive symptoms and to a lesser degree, for anxiety symptoms. Previous longitudinal studies have established bidirectional pathways between depressive symptoms and relationship adjustment, but longer studies are still rare. In the present study, we examined relationship adjustment and its links with depressive and anxious symptoms among parents with young children across a 10-year period ( $N = 164$ ). Latent growth curve linear modelling was used to test the bidirectional associations over seven time points (pre, 6 months, 1 year, 2 year, 3 year, 4 year, and 10 year follow-up). Men's anxiety symptoms and depressive symptoms at the 10 year follow-up were significantly predicted by their changes in relationship adjustment over the first four years and their initial level of symptoms at pre-assessment. For women, only their initial levels of symptoms predicted their anxiety symptoms and depressive symptoms at the 10 year follow-up. Relationship adjustment at the 10 year follow-up was not significantly predicted by men's or women's anxiety or depressive symptoms over the first four years. These findings represent one of the longest studies examining mood and relationship adjustment and add to the literature documenting the importance of relationship adjustment in predicting mental health symptoms for men.

#### **Psychopathy and reactions to distress: Can psychopathic traits be adaptive?**

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Psychopathy is a complex construct that includes a set of related personality characteristics and behavior: manipulative and exploitative interpersonal style, emotional callousness, impulsivity and engagement in antisocial behavior. These characteristics form two higher-order latent dispositions, simply labeled as Factor 1 (callous and manipulative orientation) and Factor 2 (impulsivity and antisocial behavior). While psychopathic traits are usually considered as maladaptive, in certain situations they can be adaptive, like in reactions to distress. Moreover, some of these traits appear to be more adaptive than others. Therefore, the aim of this study was to explore relations between psychopathic traits and some forms of psychological distress in a non-clinical sample. The sample consisted of 651 students from various faculties of the University of Zagreb (389 female, 260 male), with a mean age of 21.73 years ( $SD = 1.94$ ). Negative emotional states were measured by the Depression, Anxiety and Stress Scale (DASS-21; Lovibond & Lovibond, 1995), while psychopathy was assessed with the Self-Report Psychopathy scale (SRP-III; Paulhus et al., in press). Results of the regression analyses showed that psychopathic traits were not related to stress or depression. However, Factor 2 was positively related to anxiety, predicting a small, but significant amount of variance. These results indicate that some psychopathic traits (i.e., impulsivity and tendency to-

wards antisocial behavior) are positively related to anxiety, while, on the other hand, callous and manipulative orientation is not related to psychological distress, which highlights the importance of distinguishing between different forms of psychopathic traits.

#### **Emotional climate in marriage - the differences between couples without children and couples with adult children**

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Many studies show a decrease in marital satisfaction and positive exchange and an increase in conflicts among partners during transition to parenthood. In the later phases of the family cycle (after adult children leave the home), couples again face the necessity of redefining couple functioning and returning to primarily marital functioning (as oppose to primarily coparental functioning during the previous phases). The aim of this study was to describe the differences/similarities in emotional climate between couples without children and couples with adult children. The sample consisted of 244 couples, out of which 125 couples with adult children (83 of them living alone/children have left the home and 42 in transition to living alone/adult children are leaving the home). The Inventory of Affection, Negativity and Sex in Relationships (Huston, Kamenov, & Jelić, 2010) was used to describe the emotional climate. Results indicate significant differences in positive exchange as described by both husbands ( $F = 22.835, p < .01$ ) and wives ( $F = 16.415, p < .01$ ). More positive exchange is reported in couples who don't have children. Although the levels of negative exchange were assessed to be low throughout the sample, they indicate that husbands without children describe their wives as significantly less negative in their interactions than husbands with adult children ( $F = 3.284, p < .05$ ). By describing the trend, that lowered quality of emotional exchange stays present in couples even after the parental phase of marriage, these results indicate the necessity of preventive work with couples in transition to parenthood and during the parental phase, in order to allow quality of interaction in later phases of the family life cycle.

#### **Academic motivation in high school students: The role of psychological needs and identity process**

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Academic motivation is in recent research often explored within the context of two prominent psychological theories: self-determination theory and psychosocial stage theory. The goal of this study was to explore the contribution of psychological needs and identity process in the explanation of student academic motivation for attending college. A sample of 848 final year high school students (56% females; mean age 18.15 years) from different schools in Croatia participated in the study. The majority of them (86%) intend to apply for college. The measures included intrinsic and extrinsic motivation (Academic Motivation Scale), needs for autonomy, competence and relatedness (Basic Psychological Needs Scale), and dimensions of exploration and commitment (Ego Identity Process Questionnaire). According to the results, intrinsic and extrinsic motivation are moderately correlated ( $r = .50$ ). To check the possible differences in their contributors, two hierarchical regression analyses were conducted. After controlling for gender and previous academic achievement, significant predictors of intrinsic motivation were psychological needs for relatedness and competence, identity exploration and identity commitment, while significant predictors of extrinsic motivation were psychological need for relatedness, identity exploration, and identity commitment. It seems that the role of identity process is important for both types of motivation. On the other side, both psychological needs for relatedness and competence are important for intrinsic motivation, while extrinsic motivation is predicted only by psychological need for relatedness. The fulfillment of basic psychological needs, together with the identity process are important factors in academic motivation of late adolescence.

#### **The latent structure of serbian translation of Anxiety Change Expectancy Scale - Modified**

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The aim of the study was to investigate the latent structure of Anxiety Change Expectancy Scale (ASEC; Dozois & Westra, 2005) modified for the general population of psychotherapy clients. The original instrument consists of twenty 5-point Likert items aimed to measure client's beliefs regarding the change of their anxiety problem as a function of present psychotherapy treatment. It provides a single score within a range of 20 to 50. The original instrument demonstrated excellent internal reliability as well as good convergent, divergent, and valid single factor structure (Dozois & Westra, 2005). After the consent of the instrument's authors and with their supervision, the instrument was adapted for this research by changing the items regarding "my anxiety problem" to "my psychological problems". The sample consisted of 117 psychotherapy clients (68.8% female) with the average age of 31.83 years ( $SD = 11.27$ ,  $Mod = 25$ , range

18-63) who completed the ACES - M during the initial interview. The scale demonstrated a good internal consistency ( $\alpha = .90$ ,  $M = 76.72$ ,  $SD = 12.67$ ). The data demonstrated a significant sampling adequacy ( $KMO = .85$ ), while the principal axis factoring demonstrated a solution of three correlated factors rotated in Promax position, explaining 47% of total variance. The first factor is loaded by 10 negatively worded items indicating pessimism regarding change, while the second factor is loaded by five positively worded items indicating optimistic change expectancy. The third factor is loaded by four items regarding previous successes in dealing with psychological problems, while a single item did not load on any of the components. Having in mind that these results significantly differ from the original latent structure, some possible structural adaptations and shortening of the scale will be discussed.

#### **The „mere proximity effect” in the context of anti-fat prejudices among children**

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The aim of this study was to examine the effects of participants' gender, target figures' gender, and participant's actual body size (BMI) on preferences for overweight and average-weight targets. Also, the study assessed whether evaluations of an overweight target are affected by the size of the background characters, characters' gender, participants' gender and their BMI. The study was conducted on a sample of 102 children ( $M_{age} = 9.08$ ,  $SD_{age} = 1.21$ ). Twenty pairs of painted female and male child images were created for this study. Each character had an average-weight version and an overweight version. The individual images were combined in groups of four female and male children, so there were six images which included four overweight children, four average-weight children, three average-weight children and one overweight child, three overweight children and one average-weight child and finally two overweight children and two average-weight children. Participants took part in the study individually. Demographic data were collected first, then individual and group images were presented to the participants. Participants were asked how much they would like to be friends with the target person/persons. Regarding individual images, the results showed that average-weight and male targets were more preferred in relation to overweight and female targets. The overweight targets were evaluated the same, regardless of gender. The participants evaluated targets more positively if the targets were of the same sex as participants. The same trend was obtained for group images. Also, results showed that with an increase in the number of overweight children there was a decrease in evaluations of these groups. The implication of this study was discussed with regards to obesity stigma among children.

**What is really important in late adulthood?  
Investigation of influence of social support in relation  
between health and life satisfaction.**

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Late adulthood is a period of life characterized by many specificities, among which are decreased physical fitness, reduced ability to adapt, increased dependence on others and loneliness. Research shows that social relations and social support, concepts which recently gained more attention, have a very important role in health and life satisfaction of people in late adulthood. Former findings show undoubtedly that the existence of social support in life during late adulthood is associated with better functioning and health, increased prosperity, better recovery from distress and higher levels of well-being. The aim of this study, therefore, is to determine whether social support, and what kind - emotional or instrumental support, has a promotional and/or a protective role in the relationship between subjective and objective assessment of health and well-being, specifically, life satisfaction. This study included 204 subjects, mean age of 78 years, whereby the sample consisted of 60% of women. Since this is a transversal study, measures of subjective and objective assessments of health, life satisfaction assessment and the evaluation of the emotional and instrumental social support were collected at the same point of time. Four hierarchical linear analyses were conducted, whereby both main effects were found significant while testing the moderator role of emotional support in the relationship between subjective assessment of health and life satisfaction, as well as significant interaction ( $\beta = -.134, p < .05$ ). The obtained results suggest a promotional as well as a protective role of emotional support when it comes to people in late adulthood. We conclude that emotional support is a general factor of good adaptation, which also has a specific contribution to better adaptation in situations of increased risk, when it comes to the relationship between the subjective assessments of their own health and well-being, in particular, satisfaction with their own lives.

**Teachers' emotions and subjective well-being: The  
mediating role of emotional labor strategies**

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Research on teachers' emotions conducted over the past years clearly indicate that emotions are core components of teachers' lives. Teachers experience a wide variety of both positive and negative emotions in relation to their professional roles and activities. For example, teachers may feel

joy and satisfaction when students learn and make progress, frustration and anger when students misbehave or helplessness when, in spite of all the efforts invested, students refuse to engage in learning activities. Such emotions may influence teachers' performance and relationships with students, but also their sense of well-being. Moreover, teachers are obliged to follow particular emotional display rules when managing their emotions, i.e., they must perform emotional labor which can also have adverse effects on their well-being. Thus, the aim of this study was to examine relationships between teachers' emotions, emotion labor strategies and well-being, i.e., to test the mediating role of emotional labor in explaining the relationship between teachers' emotions and well-being. The study was conducted at the end of the school year on a sample of 391 elementary school teachers employed in 32 schools located in 19 different towns and municipalities mostly located in central and eastern regions of Croatia (297 were female, 82 were male, and 12 did not indicate their gender). On average, the teachers were 41.73 years old ( $SD = 10.31$ ) and had 15.05 years of teaching experience ( $SD = 10.92$ ). Teachers filled out self-report scales aimed at assessing emotions they experience in relation to their students (joy, pride, anger, fatigue, helplessness), emotional labor strategies (surface and deep acting), and different components of subjective well-being (satisfaction with life, positive experiences and job satisfaction). In order to answer the research question, and by using SEM techniques, two competing models were tested: (a) Emotional labor strategies partially mediate the relationship between emotions and well-being, and (b) Emotional labor strategies fully mediate the relationship between emotions and well-being. The obtained results clearly indicated a better fit of the partial mediation model to the data; emotions explained the variance of well-being both directly and indirectly via emotional labor strategies. Moreover, the direction of the associations among variables in the model were as expected. Teachers who experience more positive emotions use deep acting to a greater extent and have higher levels of subjective well-being. On the contrary, teachers who experience more negative emotions, use more surface acting and less deep acting in order to manage their emotions, and report lower levels of subjective well-being. Finally, more surface acting was associated with less well-being and vice versa.

**Family relationships and child physical health status  
10 years later**

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Previous research has shown that family relationships and family environment are associated with psychological and physical health of children. In addition, parental depression and anxiety are risk factors for poor child psychological health. The purpose of this study was to further examine the interrelations between family relationships, parental mood

symptoms, and child health status over a longer developmental period than typically assessed in previous studies. Two hundred and eighty families were followed for a period of 10 years from when the child was of preschool age to adolescence. Data on child health status at pre-assessment and 10 years later were collected in addition to multi-informant reports on child psychological health, family relationships, and family environment. Parental depressive symptoms and anxiety symptoms were also assessed over the 10 year period. As hypothesized, mother's poor relationship adjustment and relationship communication at pre-assessment were related to their child's reported negative health status 10 years later, even after controlling for initial health symptoms of the child and mother's initial anxiety symptoms. In addition, conflict over child-rearing reported from both parents was a negative predictor of child's health status 10 years later. These results support a growing body of literature that documents the role of family processes in children's health outcomes.

**How does resilience build positive expectations:  
The role of positive emotions in increasing optimism  
and self-efficacy**

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Numerous studies have dealt with the role of resilience and positive expectations as protective factors in situations when a person is exposed to stressful circumstances. Theoretically less examined, however, are the interdependence of these constructs and whether strengthening certain components of psychological capital can contribute to the building of others. One of the theoretical models which assumes that resilience leads to the strengthening of positive expectations is the broaden-and-build theory. According to this theory, the mechanism which explains this relation is the positive emotions, more specifically, the frequency of experiencing them. The goal of this research is to examine the assumption that resilience leads to the building of positive expectations by more resilient individuals being more likely to experience positive emotions more often, which in turn influences those individuals to perceive themselves as more optimistic and as having higher self-efficacy. Longitudinal data were collected in two waves from 674 university students (88% female). Participants completed the measure of resilience (Brief Resilience Scale) and trait positive affect (Positive and Negative Affect Schedule) at the initial assessment. The measure of personal optimism and self-efficacy (Positive and Negative Expectancy Questionnaire for the Assessment of Personal Optimism and Social Optimism - Extended) were administered after six months. The data were analyzed using macro Process. The results of this research demonstrate that more resilient persons are more prone to experiencing positive expectations: both opti-

mism and self-efficacy. The mediation analysis showed that the mechanism through which resilience contributes to the building of positive expectations is the tendency to often experience positive emotions. More resilient individuals experience positive emotions more often which leads to the building of positive expectations. In both the case of optimism and the case of self-efficacy as criterion variables, there was a partial mediation effect of positive emotions, which indicates that in addition to an indirect effect (through positive emotions), resilience also has a direct effect on the strengthening of optimism and self-efficacy. Practical and theoretical implications of the findings will be discussed.

**Attachment styles and narcissistic traits in  
relationships: What a difference they make?**

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Attachment styles that are formed during childhood are influenced by several factors, including temperament and the quality of the relationship with primary caregivers, that can also enhance the development of certain personality traits. Moreover, these factors can have an important impact on different kinds of relationships one forms in adulthood. Therefore, the aim of this study was to explore the relations between attachment styles, different forms of narcissism and satisfaction with different kinds of close relationships: with partner, friends and parents. Within a larger study, a total of 307 university students (257 female, age  $M = 21.57$ ,  $SD = 2.90$ ) completed an online questionnaire which included the modified Experiences in Close Relationships Inventory (Kamenov & Jelić, 2003) and Pathological Narcissism Inventory (Pincus et al., 2009), while satisfaction with close relationships was assessed with an item form the International Wellbeing Index (Cummins, 2002). The results of the hierarchical regression analyses showed that, in the relationship with parents, neither attachment styles, nor narcissism had any impact on the satisfaction with close relationships. On the other hand, attachment style predicted 8.3% of the variance of the satisfaction with close relationships when assessing the relationship with partner, with attachment anxiety being the only significant negative predictor. Finally, when it comes to the satisfaction with close relationships with friends, attachment styles explained a unique 6.1% of the variance (with the only significant negative contribution of attachment avoidance), while vulnerable narcissism explained an additional 7.5% of the variance above and beyond the attachment styles. These results highlight the importance of distinguishing between different types of interpersonal relations when examining the impacts of narcissistic traits and attachment styles in these relations.

**Optimization of mental health budget as a tool to contrast disease chronicity and facilitate patients' integration, social inclusion and return to work: Preliminary findings**

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The main purpose of our research project is to identify a set of psychological variables which contribute to optimize the mental health budget (MHB) effects by increasing social inclusion, integration into community, autonomy, and return to work of mentally disordered people. MHB is an innovative tool which includes human, professional, and economics resources necessary to restore social functioning, social inclusion, and positive prognosis in people affected by mental disorders. Furthermore, MHB triggers processes

of socially acceptable functioning and production. The present preliminary study examined data stored in a database since 2012 from 76 mentally disordered (MD) people who attended/are attending a cooperative which operates in the area of psychiatry and disability. The study included socio-demographic variables, social networks, autonomy levels in different daily life activities, and work activities. Results showed that MHB users were mostly males and that older patients needed more resources, were less autonomous, especially in managing their own money. In addition, preliminary results indicated that MHB users who were involved in work activities also referred better social relationship and were more autonomous in their daily activities in comparison to MHB users who did not work. Future work will address the role of further variables such as psychiatric diagnosis, long term autonomy and social networks, and cognitive as well as personality variables. Findings from our project will be useful to optimize the mental health budget and, as a consequence, to improve the community welfare.



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