

# 14th Alps Adria Psychology conference University of Milano-Bicocca

## Program

### Monday Sept. 5

**15:00 – Welcome Address – Room: Luisella Sironi U4-8**  
**Rossana Actis Grosso & Daniele Zavagno**

**16:00 – Keynote speaker for Italy – Room: Luisella Sironi U4-8**  
**Prof. Tiziano Agostini, University of Trieste**

***Auditory perception and modeling of movement: Twenty year of experimental research***

Since the publication of the 2004 paper entitled "The relevance of auditory information in optimizing hammer throwers performance" several scientific papers have been published to support the hypotheses put forward in the original article. From the results of this studies, we can reasonably state that: 1) Human body cyclical movements can be accurately represented by an auditory stimulus having specific rhythmical characteristics; 2) The auditory stimulus produced by a cyclic human movement is easily recognized by the subject who produced it; 3) Ecological sounds (the real sounds produced by real body movements) are more effective than artificial sounds in building up motor action mental representations; 4) Auditory information is an important feedback to exert an accurate control of timing in terms of improvement and standardization of a specific movement. All this evidences have important practical and theoretical implications.

17:00 Welcome spritz

### Tuesday Sept. 6

**10:00 – Welcome Address – Room: Luisella Sironi U4-8**  
**Prof. Angelo Maravita**

**10:30 – Keynote speaker for Slovenia – Room: Luisella Sironi U4-8**  
**Prof. Urška Fekonja, University of Ljubljana**

***Early language development: The interplay of child, family and sociocultural factors***

Infancy, toddlerhood and early childhood are periods of rapid quantitative and qualitative developmental changes in language acquisition. It has been well established that child's language develops within a sociocultural context, mainly in verbal and social interactions with more competent adults. Among most important factors contributing to early language development are family literacy and socioeconomic characteristics of home environment. In Slovenia, a large number of studies have been carried out in recent years investigating

multiple pathways to early acquisition of various aspects of language, including vocabulary, grammar and storytelling ability. The results of these studies highlight the role of different factors of early language development, such as shared reading, parental knowledge of child development, characteristics of child-directed speech, child gender and dyadic symbolic play, as well as the dynamic relationships among them. The findings outline the importance of early detection of language delays and timely interventions, which focus on diminishing the risk and strengthening the protective factors, both within family and preschool settings.

Morning talks (12:00-13:00) – Room: U4-2  
Chair: Olga Daneyko

*„New Blues” the phenomenological effects of musical improvisation*

**V. Kemény\*, D. Vida, & S. Bandi**

University of Pécs, Hungary

Musical improvisation is a widespread musical tradition which is regarded not just as a spontaneous musical expression but also as a therapeutic tool. The psychological functions of music, like regulating emotions and interpersonal relations can serve as a bridge between the goals of music therapy and musical improvisation, . The aim of this qualitative research is, on one hand it to explore the psychological motives and phenomenology of musical improvisation and on the other to find the positive mental health functions of it. In depth semi-structured interviews were recorded with 8 musicians (four trained jazz musicians, four self trained). Interpretative Phenomenological Analysis found three master themes containing seven emerging themes. These themes centered around emotion regulation and expression, the feeling os social cohesion and the desire of creation and achievement. In this empirical study I found that musical improvisation has strong positive effects on mental health by providing a medium for self-expression and self-exploration and by creating an intersubjective field between the improvisers and listeners. These motives are also similar to the active and receptive traits of the autotelic personality disposition which can cultivate sensitivity towards flow experiences. That way musical improvisation can have beneficial effects on mental health.

*The influence of order in the SNARC effect is revealed by context and task demands: the case of the mobile phone keypad*

**S. Mingolo\*, V. Prpic, A. Mariconda, E. Bilotta, T. Agostini, & M. Murgia**

University of Trieste, Italy

Literature on the SNARC effect highlights that it can be influenced by ordinality. This study aims to determine how the order elicited by the context in which numbers are presented interact with the order elicited by task demands to modulate the SNARC effect. In three experiments, a context that elicits an atypical numerical order was presented, namely a mobile-phone keypad. Each experiment employed a different task, which could be either consistent (Experiment 1), inconsistent (Experiment 2) or unbound (Experiment 3) to the order elicited by the context. In Experiment 1, participants classified numbers based on their spatial position on the keypad. A spatial association consistent with the keypad's order emerged, revealing that the context's order influenced the SNARC effect. In Experiment 2, participants performed a magnitude classification task. No clear effects emerged, probably because the orders elicited by context and task demands conflicted, disrupting the SNARC effect. In Experiment 3, participants performed a parity judgement task. A regular SNARC effect emerged, indicating that context's order did not affect it.

Overall, results indicate that a context eliciting an atypical numerical order can reverse the SNARC effect only if task demands elicit the same order.

*The Poggendorff illusion in Ruben's Descent from the Cross: Does the illusion ever matter*

**O. Daneyko\*, D. Zavagno, & N. Stucchi**

Sheffield Hallam University, UK

A visual distortion most easily encounterable in paintings is the Poggendorff illusion. The "Descent from the cross" in Antwerp, depicted by Rubens in 1612-13, is one of those cases. To test the claim that Rubens observed the illusion and thus corrected for it in the Antwerp panel (Topper, 1984), we conducted two experiments with actual size projections of two versions of Descent from the Cross, both by Rubens: the one conserved in Antwerp (exp1), and the one conserved in Lille (1616-17; exp 2). In both experiments, participants' task was to align a thick line replacing an upper portion a ladder's rail (digitally removed from the images) to a thick line superimposed on the lower portion of the same rail. Results from both experiments show the presence of a Poggendorff illusion in both paintings. However, in exp. 1 the mean displacement was significantly smaller than the painter's actual displacement, while in exp. 2 alignments were affected by the Poggendorff illusion, yet Rubens painted a perfect geometric alignment of the two visible portions of the rail. Results do not support Ruben's perceptual awareness of the Poggendorff illusion; instead they confirm the role of figural context in the outcome of the illusion.

13:00 Lunch break

15:00 **Symposium: *Spatial associations for numerical and non-numerical stimuli: novel evidence and future perspectives*** (part 1) – Room: U4-2

**Organized by V.Prpic and M.Murgia**

*Spatial representation of symbolic and non-symbolic numerals*

**V. Prpic\*, Y.A. Basamh, J. Sargent-Walker, C.M. Goodridge, T. Agostini, & M. Murgia**

University of Trieste, Italy

Recent evidence shows that both symbolic (digits) and non-symbolic (dots) numerals are spatially represented, with small numbers eliciting faster left key responses and large numbers eliciting faster right key responses (Spatial-Numerical Association of Response Codes or SNARC). A format independent SNARC effect has been used to support the existence of a common system for symbolic and non-symbolic numerical representations. This study aims at investigating whether symbolic and non-symbolic numerals interact in the SNARC effect when both numerical formats are shown simultaneously. Participants were presented with dice-like patterns, with digits being displayed instead of dots. Experiment 1 consisted in two separate magnitude classification tasks, with participants being required to respond either to the number of digits presented on the screen or to their numerical size. In the non-symbolic task, they had to judge whether the digits on the screen were more or less than three, irrespective of the numerical value of the digits. In the symbolic task, participants had to judge whether the digits on the screen were numerically smaller or larger than three, irrespective of the number of digits being present. In Experiment 2, a different group of participants replicated the first experiment by

evaluating parity rather than the magnitude of the stimuli Overall, results show a consistent SNARC effect in the symbolic task which is not modulate by non-symbolic numerals. Our findings support the idea of independent representations and question some propositions of current theoretical accounts, such as the Approximate Number System (ANS) and A Theory of Magnitude (ATOM).

*How salient should a context be to modulate spatial-numerical associations? A revisit of Bächtold et al.'s (1998) clock-face*

**M. Murgia\*, S. Mingolo, A. Mariconda, E. Bilotta, V. Prpic, & T. Agostini**

University of Trieste, Italy

Previous literature widely documented the existence of associations between numbers and space. A typical example of these associations is the SNARC effect (Dehaene, Bossini, & Giraux, 1993), consisting in faster left-key responses to small numbers and faster right-key responses to large numbers. However, this pattern of associations can be modified/reversed by manipulating contextual factors. For instance, Bächtold et al. (1998) found a reversed SNARC using an atypical context, namely a clock-face, with small numbers displayed on the right and large numbers on the left. In the present study we revisited the original study by Bächtold et al., investigating the role of the salience of the context. In Experiment 1 (low salience), participants mentally represented the clock-face before performing both a magnitude classification task and a parity judgement task. Results revealed a typical SNARC effect, indicating that the context - when it is irrelevant for the task - did not change the pattern. In Experiment 2 (medium salience), the same tasks were performed, but a secondary task retrieving the clock-face configuration was added. Results showed no SNARC effect, probably due to a moderate interference of the context determined by task demands. In Experiment 3 (high salience), the clock-face configuration was relevant for the primary task (i.e., judging numbers based on their position on the clock-face). Similar to Bächtold's original study, a reversed SNARC emerged. Concluding, the context alters the SNARC effect only when task demands increase the salience of the context itself, making it relevant for participants' responses.

*Evidence of a SNARC-like effect for visual speed*

**M. Vicovaro\*, R. Boscarol, & M. Dalmaso**

University of Padova, Italy

SNARC and SNARC-like effects indicate that numerical and non-numerical magnitudes can be represented along a hypothetical left-to-right vector (i.e., smaller and larger quantities are represented on the left and on the right, respectively). Here, we explored the existence of a spatial representation for visual speed, which is a peculiar magnitude because it is intrinsically related to space in the outer world. We tested if this possible representation unfolds along the typical left-to-right direction, or whether it is flexibly modulated by the motion direction of the stimuli. Participants were asked to compare, using lateralized response keys, the speed of random dot kinetograms with the speed of a reference. Dots direction could be left-to-right (Experiment 1), right-to-left (Experiment 2), left-to-right/right-to-left intermixed (Experiment 3), or random (Experiment 4). The results provide support for a relatively stable left-to-right representation, which, however, can be undermined by inconsistent motion directions along the horizontal axis (Experiment 3).

16:00 Coffee break and odd numbers Poster session

17:00 **Symposium: *Spatial associations for numerical and non-numerical stimuli: novel evidence and future perspectives*** (part 2) – Room: U4-2

**Organized by V.Prpic and M.Murgia**

*Face age is mapped onto the horizontal, sagittal, and vertical axes*

**M. Dalmaso\*, S. Pileggi, & M. Vicovaro**

University of Padova, Italy

According to increasing evidence, time can be represented along the horizontal, sagittal, and vertical axes. In the current study, we explored whether the spatial representation of time can also emerge for the age associated with facial stimuli. In three experiments, participants were asked to classify a central target face as younger or older than a reference face, displayed at the beginning of the experiment. Responses were provided along the horizontal (Experiment 1, online), sagittal (Experiment 2, online) or vertical (Experiment 3, laboratory-based) axis. Overall, evidence of a spatial representation of face age from left-to-right (Experiment 1), back-to-front (Experiment 2), and top-to-bottom (Experiment 3) emerged, in line with the current literature on time representation. Moreover, a distance effect emerged in all three experiments. These results suggest that the relationship between time and space also extends to the social domain.

*Horizontal and vertical space-time associations: Evidence from a go/no-go task*

**D. Domijan\* & V. Topić**

University of Rijeka, Croatia

In four experiments, we investigated space-time associations by using implicit task that do not invites activation of spatial representation. In a go/no-go task, participants (N = 50 in each experiment) were asked to either press a single button when they found the target or refrain from responding when there was no target in a search array. We manipulated the duration of the target-alone presentation that preceded a 7 × 7 search array consisting of either target plus distractors or distractors alone. This design allowed us to test for a possible effect of space along horizontal, vertical and two diagonal axes. In Experiment 1, the durations of target-alone presentation were 300, 600, 1,200, or 1,500 ms. We found faster responses to shorter durations when the target appeared in the upper relative to the lower space and in upper-left relative to lower-right space. Interestingly, there was no evidence for a horizontal space-time association. In Experiment 2, we employed shorter temporal durations (200, 300, 800 or 900 ms) and found no statistically significant effect along any of the tested axes. In Experiment 3, we varied the duration of the inter-stimulus interval and there was no statistically significant effect along any of the tested axes. Finally, in Experiment 4, we employed pop-out search task and again we found no effect along any of the tested axes. Results are interpreted as evidence that space–time associations arise from the grounding of mental representation of time in physical experiences with specific spatiotemporal dynamics.

*Spatial biases in infants' learning of serial order: cross-cultural evidence for the role of experience*

**M. Arioli\*, V. Macchi Cassia, N. Shirai, M. Kobayashi, H. Bulf, & K.M. Yamaguchi**

University of Milano-Bicocca, Italy

Recent evidence shows that preverbal infants raised in Western cultures represent increasing numerical order and extract rule-like patterns from visual sequences when items are presented from left to right, but not right to left. These findings match earlier demonstrations that adults and preliterate children represent numerical and/or non-numerical order along a spatial continuum whose directional attributes are shaped by reading-writing direction.

Here we explored the developmental origins of the directional properties of order-space mapping by testing whether/how visual rule learning (RL) abilities are affected by the spatial orientation of the sequences in 115 Italian and 120 Japanese 7-month-old infants, whose cultures differ for the unidimensional vs multidimensional structure of their reading-writing systems.

Infants were familiarized with rule-based sequences of visual shapes presented in a left-to-right, right-to-left, top-to-bottom or bottom-to-top orientation. They were then tested with six sequences of novel shapes depicting the familiar or a novel rule presented with the familiar orientation. Results showed that Italian infants succeeded at RL only when sequences were left-to-right and top-to-bottom oriented (Novelty x Direction,  $p=.019$ ), while Japanese infants succeeded in all conditions, irrespective of the spatial direction of the sequences ( $ps<.040$ ).

We interpreted these results as evidence of early preferential directional encoding strategies of serial order and its internal representation that are modulated by culture through infants' passive exposure and/or active imitation of directionally relevant culturally-driven routines. To further explore this argument, we will present data on caregivers' directional behaviors during sessions of joint reading and toy construction.

## Wednesday Sept. 7

10:00 **Keynote speaker for Croatia – Room: Luisella Sironi U4-8**

**Prof. Mladenka Tkalčić**

***Brain-gut miscommunication: Irritable bowel syndrome***

It is well known that the brain and the gastrointestinal system are closely linked through bidirectional signalling pathways that include nerves, hormones, and inflammatory molecules, and that dysregulation of this brain-gut axis could lead to functional gastrointestinal (GI) disorders, such as irritable bowel syndrome (IBS). IBS is one of the most common functional GI disorders characterized by abdominal pain and stool irregularities.

IBS is considered a biopsychosocial disorder and its symptoms could result from any combination of altered GI motility, visceral hypersensitivity, immune activation of the bowel mucosa, alteration in the microbiota, and disturbances in brain-gut function. The brain-gut axis (central nervous system – enteric nervous system) is the neuroanatomic substrate by which psychosocial factors influence the GI tract and vice versa. IBS symptoms are often maintained by a vicious cycle of physical, behavioural, and environmental factors that disrupt the neural connections between the brain and gut.

Using the Biopsychosocial Conceptual Model of functional GI disorders, the goal of this lecture is to give an overview of our research results and to discuss them in the context of

recent understanding on how the complex interactions of biological, psychological, and environmental factors contribute to the development and maintenance of IBS.

11:00 Coffee break

11:30 Morning talks – Room: U4-2

Chair: Daniele Zavagno

*Investigating the role of the dorsal fronto-parietal attention network in the center-surround profile of the attentional focus: A Transcranial Magnetic Stimulation (TMS) study*

**G. Lazzari\*, C. Lega, S. La Rocca, L. Ronconi, & R. Daini**

University of Milano-Bicocca, Italy

Neurophysiological findings show that the focus of attention in visual search has a spatial profile consisting of a central enhancement surrounded by a narrow zone of attenuation, which is thought to arise from top-down fronto-parietal recurrent activity. However, the respective roles of different nodes within the network and their hemispheric specialization are still unclear. Here, we used TMS to evaluate the role of two regions of the dorsal attention network (DAN) in the surround suppression of attentional focus: the Frontal Eye Field (FEF) and the Intraparietal Sulcus (IPS). Participants performed a task of visual target discrimination of stimulus orientation within distractors to map the entire spatial profile of the attentional focus, while triple-pulse 10 Hz TMS was delivered either to IPS or FEF on the right (Exp 1) and left (Exp 2) hemisphere. Results showed that stimulation of the IFEF, but not IIPS, significantly decreased participants' performance, regardless of the spatial position of stimuli. Crucially, stimulation of rFEF and rIPS significantly changed the center-surround profile, by widening the inhibitory ring around the attentional focus. Our results pointed to a pivotal role of the right DAN in modulating inhibitory spatial mechanisms that are needed to limit interference by distracting surrounding elements.

*Cultural adaptation and psychometric evaluation of two abbreviated forms of the Everyday Problems Test*

**L. Juras\*, M. Martincevic, A. Vranic, & B. Rebernjak**

University of Zagreb, Croatia

The competence to independently solve everyday tasks is crucial for prosperous aging. However, there is a lack of sensitive performance-based measures of everyday cognitive competence, important for detecting normative and pathological changes in neurocognitive aging, available to practitioners and researchers in Croatia. In a previous study we abbreviated the 84-item EPT (Everyday Problems Test, Willis & Marsiske, 1993) into two brief 14-items forms, suitable for the context of repetitive testing and time-constrained administration. This study served to further explore the psychometrical characteristics of these two brief forms of EPT in a sample of 70 middle-aged adults (age range 50 to 65) participating in a cognitive training study. Both brief EPT forms demonstrated satisfactory internal consistency and criterion-related validity based on their relationship with socio-demographic variables and fluid and crystallized intelligence. These results are in line with a theoretical view of everyday cognitive competence as related to individual ability to reason and solve novel problems, as well as the knowledge based on one's education and experience. These preliminary analyses provide additional support for the two brief forms of EPT which can be viewed as a valuable tool of assessing everyday cognitive competence.

*The effects of executive functions on the development of sensorimotor performance among preschool children. Is there a bidirectionality?*

**C. Nagy-Tószegi\* & B. Lábad**

University of Pécs, Hungary

Executive functions and sensorimotor integration play a critical role for children's goal-directed behavior and school readiness. Our present study examined relationship between these two sets of skills among five-to-seven-year-old neurotypical preschoolers (N=50) and children who have showed delay at the school readiness examination (N = 50). Multiple tasks were assessed to measure the executive functions and sensorimotor integration. The inhibition control was measured with a Go / No-Go type task, the cognitive flexibility subcomponent was measured with the help of a card-sorting task (DCCS) and working memory was measured with a visual and a verbal tasks (WPPSI-IV, MAMUT-R). To examine children's sensorimotor integration, we used posture imitation, body midline crossing, bilateral motor coordination, and sanding balance subtests of the South-Californian Sensory Integration Test (SCSIT). The results indicate that children showing delay in school readiness examination exhibited impairments in both executive functions and sensorimotor performance. Futhermore the sensorimotor performance correlated with all the three components of executive function. Our findings provided support for bidirectionality between executive functions and sensorimotor skills with executive function being a stronger predictor of sensorimotor development. Our findings point to the importance of supporting children's executive function development enhancing sensorimotor development as both fundamentally affect school readiness.

*The influence of arm posture on the Uznadze size-contrast haptic aftereffect*

**D. Zavagno\*, F. Frisco, O. Daneyko, & A. Maravita**

University of Milano-Bicocca, Italy

The role of hand position in the Uznadze haptic size-contrast aftereffect is investigated. Typically, two identical test spheres (TS) clenched simultaneously in the two hands appear haptically different in size after both hands have been adapted to adapting spheres (AS) of different sizes: the hand adapted to a small AS feels TS bigger than the hand adapted to a big AS. Two experiments are described in which right-handed participants had to evaluate the haptic impressions of two TS after adaptation by finding their match on a visual scale. In experiment 1, half of the participants underwent adaptation and carried out the matching task with their arms parallel; the other half crossed their forearms during the entire experiment. In experiment 2, participants carried out the matching task either with arms parallel or crossed, while adaptation was carried out by continuously changing the position of the arms from parallel to crossed and vice versa. Results from both experiments confirm that the illusion occurs always in the same direction regardless of the position of the hand in space, suggesting that the illusion is mainly due to low level analyses of post adaptation stimulation.

13:00 Lunch break



15:00 Afternoon talks (session 1) – Room: U4-2  
Chair Rossana Actis Grosso

*One-year-old children's social competence associated with maternal depression and anxiety*

**P. Ibolya Polgár\*, F. Kocsor, & M. Pohárnok**

University of Pécs, Hungary

Our research aims to explore the relationship between one-year-old children's social competence and their mothers' emotional distress.

Our study included 247 mothers (M[age]=32,43; SD=5,48) with their one-year-old infants (M[age]=54,5 weeks; SD=1,16; 136 boys) selected from the Growing Up in Hungary (GUH) birth cohort. Maternal symptoms of depression and anxiety were recorded in the first three waves of the GUH (28-32 weeks prenatally, 6 and 12 months postpartum). We assessed mothers' emotional distress by adding their symptoms of depression (CES-D-8) and generalized anxiety (GAD-2) at each wave. Children's social competence was measured at 12 months by using the ASQ:SE-2 and the personal-social factor of the ASQ-3 questionnaire.

Mothers were clustered into two groups according to their levels of emotional distress at each wave: one cluster included mothers (n=186) characterized by low distress, while the other cluster of mothers (n=26) had a higher level of distress across the waves. According to our statistical analysis, we found trend-level differences in the two clusters along both questionnaires: those one-year-old infants, whose mothers had permanently high emotional distress across the three waves, showed poorer achievement and more difficulties and delays in their social competences than children with mothers characterized by low distress.

*Through your ancestors' eyes – early attachment, transgenerational atmosphere, and political identity*

**Á.A. Kovács\* & S. Bigazzi**

University of Pécs, Hungary

The narrative of historical trauma within our families greatly shapes how we perceive the current social and political environment we live in. Besides, the quality of an individual's early primary attachment, that of their primary authority figures, or early adverse childhood experiences majorly influence their adult personality structure. The aim of the current study is twofold: 1) we aim to explore the interrelationship between adult personality structure, early primary attachment, possible adverse childhood experiences and the way we perceive certain political affiliations; 2) we intend to highlight the possible interrelationships between early attachment types, early adverse childhood experiences, adult personality structure and our sense of national identity, sense of collective victimhood, feelings of social connectedness as well as our historical narrative. In this study we applied mixed method analysis to investigate our topic: we used a set of questionnaires as well as asked participants to provide a brief written narrative of their account of historical traumas that influenced their family. Our preliminary data partly proves our initial hypotheses and highlights that there is much room for further analysis and research within this conceptual framework.

*Distance learning for university students during the Covid-19 pandemic: A thematic analysis*

**A. Tedde\*, E. Castellani, & R. Actis-Grosso**

University of Milano-Bicocca, Italy

Amongst the dramatic changes due to the coronavirus pandemic, distance learning was a particularly significant one. Surprisingly, little attention has been paid to experience related to the distance/emergency learning for university students. Through this study we explore how university students lived the two-year period of distance/emergency learning, by asking to 120 students (a.a. 2020/2021 and 2021/2022) to write a personal report, focused on the technology used (and on its strengths and weaknesses) for lessons, exams and meeting hours. Notwithstanding instructions, reports were often referring to personal life instead of to distance learning, revealing the pervasive (and almost intimate) role of technology in defining coping strategies for young adults. The 120 reports were analyzed according to the 6-steps thematic analysis method (Brown, Clarke; 2006). The areas of greatest interest are: 1) interaction with technologies, 2) social interaction with colleagues and teachers 3) interaction (or lack of-) with meaningful persons (friends, family, partener) 4) dysfunctional behaviors and related problems (both physical, such as alteration of the sleep-wake cycle, sight problems, and psychological). Reference theories are grounded in social cognition according to which the way a person behaves in a situation depends on how s/he defines it in relation to personal interests, purposes

16:00 Coffee break and even numbers Poster session

17:00 Afternoon talks (session 2): – Room: U4-2

Chair TBC

*A new multicomponent task to measure cognitive control*

**M. Klančič\* & A. Podlesek**

National Institute of Public Health of the Republic of Slovenia

Cognitive control is defined as a multicomponent construct of interrelated yet separable executive functions (working memory updating, inhibition, and switching) that regulate goal-directed behaviour in changing environments. Cognitive tasks typically aim to measure isolated functions. Our goal was the opposite – to develop a multicomponent task that combines different functions and assesses the overall efficiency of cognitive control. The new task requires participants to use updating (the n back task) and inhibition of prepotent responses (the go/no go task) in a simulated driving scenario, resulting in five conditions: (i) the go task, (ii) the go/no-go task, (iii) the n-back task, (iv) the n-back task combined with the go task, and (v) the n-back task combined with the go/no-go task. In a study with 52 participants, response accuracy decreased and reaction time increased in the combined-demands conditions compared to the single-demand conditions. Correlations between performance measures in the different conditions were negligible, indicating that the multicomponent task can still be used for differential assessment of individual executive functions. However, examining the interaction between the two cognitive demands provided additional insight into the subject's general cognitive control mechanisms and offered new opportunities for exploring the overall efficiency of executive functions.

*In the wake of the pandemic. Benefits and makings of remote neuropsychological assessment in ageing*

**E. Rizzi\*, F. Giaquinto, R. Daini, & P. Angelelli**

University of Salento, Italy

The COVID-19 pandemic has changed the habits of the worldwide population, forcing people to social distance and leading psychologists and neuropsychologists to adopt new tools and modify clinical settings. A growing interest in video-conferencing neuropsychology assessment highlights the need to establish a validated and specific protocol, as well as new normative data. The present study aimed to demonstrate the validity and effectiveness of a neuropsychological screening protocol in video-conferencing to identify cognitive impairment in the early stages.

Participants (age range 60–80) took part in the cognitive and behavioural assessment divided into two consecutive sessions, in-person (i.e. standard face-to-face reference-test) and in a remote setting (i.e. experimental protocol), using Google Meet. Results provide evidence for the clinical use of video-conferencing protocol and the comparability between the face-to-face reference test.

Therefore, it is possible to follow face-to-face procedures and instructions in a remote setting. Also, the findings suggest that the video-conferencing protocol could offer numerous advantages: cost savings, greater patient satisfaction, and easier access to the diagnostic process for patients living in rural areas or with physical and motor limitations.

*The time of distance learning: what can re-viewing tell us about sustain attention?*

**M. Ingiardi\*, M.A. Petilli, F. Gasparini, E. Ludovici, F.C. Reguzzoni, L. Girelli, E. Bricolo, F. Conte, R. Garbo, E. Fersini, & R. Daini**

University of Milano-Bicocca, Italy

Sustained attention is a cognitive function critically involved during face-to-face lessons (Hooper & Chang, 1998). The Covid-19 pandemic context imposed a restructuring of the teaching system by introducing mass use of distance learning. Here we focus on one of the students' behaviors that can be extracted from distance learning, namely the percentage of re-viewing of video-lesson parts, and we tested how such a parameter is related to 5 dimensions affecting sustained attention (i.e., stimulus, clarity, relevance, concentration, simplicity). To this aim, we collected data on asynchronous remote classes held by the University of Milano-Bicocca during the 2020-2021 academic year and asked 90 students (66 females, age 20 to 50 years) to score these five dimensions for video-lesson sections with high vs low percentage of re-viewing. Results indicate that relevance and simplicity are mostly associated to the percentage of re-viewing. We debate whether this result can be linked to sustained attention.

18:00 *Business meeting*

19:00 *Social dinner*

## Thursday Sept. 8

10:00 **Symposium: *How dark personalities see themselves and others: The Dark Triad and social cognition*** (part 1) – Room: U4-2

**Organized by András Láng**

*„You’re simply the best”? Development and initial validation of the bifactorial Narcissistic Distortion Inventory (NDI)*

**D. Vida\*, A. Láng, L. Nagy, Z. Bodó-Varga, Á. Putz, A. Czibor, G.V. Csapó, V.M. Kemény, & S.A. Bandi**

University of Pécs, Hungary

As a classic construct of both clinical and personality psychology, narcissism has been investigated and described from interpersonal and emotional perspectives, but the cognitive features of the narcissistic traits are relatively neglected – predominantly in the case of creating measurement instruments. We would like to present our initial findings about the construction of an original self-report tool designed to assess narcissistic cognitive distortions, the Narcissistic Distortion Inventory (NDI). This instrument tries to integrate the cognitive-behavioural and schema-oriented formulations with respect to the heterogeneous nature of narcissism (vulnerability and grandiosity). In our study 156 respondents participated ( $N=156$ ,  $M_{Age}=20.40$ ;  $SD_{Age}=1.75$ ), 114 females, 40 males and 2 participants did not disclose their gender. Besides the initial NDI items Narcissistic Personality Inventory (NPI) and Maladaptive Covert Narcissism Scale were administered to assess grandiose- and vulnerable narcissism respectively. The confirmatory factor analyses confirmed the hypothesised bifactor structure of NDI ( $\chi^2(89)=159.81$ ;  $p=0.064$ ;  $CMIN/DF=1.27$ ;  $CFI=0.98$ ;  $TLI=0.98$ ;  $SRMR=0.08$ ;  $RMSEA=0.04$ ). The internal consistency of grandiose distortions is acceptable ( $\alpha=0.82$ ) and excellent in the case of vulnerable distortions ( $\alpha=0.91$ ). Grandiose narcissism is strongly associated with grandiose distortions ( $r_s=0.76$ ,  $p<0.001$ ), while vulnerable narcissism is similarly connected to vulnerable distortions ( $r_s=0.66$ ,  $p<0.001$ ). The two factors of distortions were negatively correlated with a weak effect size ( $r_s= -0.29$ ,  $p<0.001$ ). As a conclusion our findings support the initial validity and reliability of NDI, which after further thorough psychometrical analyses could be a novel and effective instrument to assess this relevant aspect of narcissism both in empirical and applied settings.

*It’s a matter of trust. The effect of Machiavellianism on economic decisions in a new experimental game*

**Á. Putz\*, A. Czibor, G.V. Csapó, V.M. Kemény, D. Vida, S.A. Bandi, & A. Láng**

University of Pécs, Hungary

The phenomenon of intra- and intergroup cooperation has been studied extensively both from an evolutionary-, as well as social psychological perspective. Machiavellianism has been repeatedly linked with selfish economic decisions in various social dilemma situations. High Mach individuals are also known as flexible strategists, however, who can and will cooperate with their peers if it aligns with their own self-interests. The current study aims to create a situation which is predicted to elicit prosocial decisions even from high Mach participants. In this new experimental game – developed by the authors – subjects ( $N = 146$ ) in two adjacent villages are threatened by a flood which they have to stop by allocating their sandbags among three possible locations on the map. Participants might want to strengthen their own houses (selfish strategy) or help their neighbors

building a small dam at the border of their village (in-group favoritism). Finally, participants may opt to allocate sandbags to the big dam protecting both villages in the process (intergroup cooperation). Subjects' level of Machiavellianism was assessed by the Mach subscale of the SD3 questionnaire. The statistical analysis confirmed that under these conditions even high Mach participants made prosocial allocations. However, while low Mach subjects demonstrated an increased tendency for intergroup cooperation, high Mach participants expressed higher levels of in-group favoritism in the game. We interpret these findings as a manifestation of high Mach's increased mistrust in others, but at the same time emphasize the role of social identity theory behind the motivation of high Mach's prosocial actions.

*Emotional shallowness or emotional depth? – A deeper analysis of the relationship between Machiavellianism and emotional intelligence*

**G.V. Csapó\*, A. Láng, Á. Putz, D. Vida, S.A. Bandi, A. Czibor**

University of Pécs, Hungary

Machiavellianism is a personality trait based on the exploitation and manipulation of others, whereby the Machiavellian individual uses others as tools to achieve their goals. There have been several studies that have attempted to explore whether individuals with high Machiavellian tendencies have better mind-reading skills than others or higher emotional intelligence than their peers, but the results are inconsistent. Therefore, my research aims to gain a deeper understanding of the relationship between Machiavellianism and emotional intelligence and mentalization.

The participants in the study completed several questionnaires measuring Machiavellianism and the WLEIS-HU questionnaire that measures the four main dimensions of emotional intelligence. In addition, participants also took part in a text creation task, which was subjected to narrative psychological content analysis.

The results showed that a significant relationship was found between Machiavellianism and some sub-factors of emotional intelligence; a negative significant relationship was found for valuing others' emotions and managing emotions, while a positive significant relationship was found for harnessing emotions. In addition, in the narrative psychological analysis, significant results were obtained for emotions.

These results answer a number of questions and contribute to a better understanding of the phenomenon of Machiavellianism and provide a good starting point for further research to get closer to a more thorough understanding of the relationship between Machiavellianism and emotions. In addition, they raise the possibility that it might be more useful to examine the relationship between Machiavellianism and emotional intelligence at the level of components rather than as a whole.

11:00 Coffee break and free poster session

12:00 **Symposium: *How dark personalities see themselves and others: The Dark Triad and social cognition*** (part 2) – Room: U4-2

**Organized by András Láng**

*The popularity of adolescents with high scores in dark triad personality traits: How they are seen by their peers?*

**Z.P. Szabó\*, N. Orosz, R. Gulyás, E. Simon, & J.L. Marót**

Budapest University of Technology and Economics, Hungary

In our study, we investigated the relationship between dark triad personality traits and popularity in high school classes. 184 high school students from 9 high school classes ( $M = 16.29$ ,  $SD = 1.36$ ) completed self-report measures of dark triad personality traits, broad personality traits, and they also completed a sociometric survey. The sociometric survey is a method to assess peer relationships between adolescents. The results showed that narcissism and psychopathy scores were positively related to sociometric status ( $r = .24$  for narcissism and  $r = .21$  for psychopathy, both  $ps < .01$ ), indicating that adolescents higher in narcissistic and psychopathic traits are more popular than adolescents lower in these traits. This was true even after controlling for broad personality traits and Machiavellianism. Item-level analysis showed that the leadership abilities connected to narcissism, and the deviant behaviors (e.g., recklessness) connected to psychopathy were what made adolescents high in these traits popular. However, the frequency of high DT scorers in a class was an indicator of low group coherence, suggesting a complex relationship between dark triad personality traits, popularity, and group harmony. Despite their popularity, the presence of high DT scorers had a somewhat toxic effect on the overall group relationships. We will interpret our results in the framework of evolutionary theories such as life history theory.

*Gender differences in dark leadership: Corporate position and external evaluation of men and women leaders with dark personality traits*

**A. Czibor\*, S. Kázmér-Mayer, D. Klajkó, G.V. Csapó, B. Bakuretz, N. Fejes**

University of Pécs, Hungary

Research findings in organizational psychology suggest that the individual level of socially aversive personality traits (subclinical psychopathy, subclinical narcissism and Machiavellianism; so-called dark triad of personality, DT) affect one's career choices and contribute to the emergence of leaders. Leaders with strong DT traits are characterized as selfish, exploitative, manipulative, or even „toxic”; resulting in lower job satisfaction among subordinates, decreased trust in the management and a higher prevalence of workplace bullying. Recent research has paid little attention to the gender-related aspects of these fields.

The current study aimed to investigate how DT traits are represented among male and female leaders, and how the leadership effectiveness of “dark” leaders are evaluated, depending on the leaders' gender.

In Study 1 ( $N=1405$ ), focusing on the relationship between corporate position and DT scores, our results show, that among women, the only significant difference between employee, manager and executive groups were found in Narcissism; while among men, Narcissism and also Machiavellianism scores were higher in higher corporate positions. These findings suggest, that dark personality traits affect women and men career paths differently. In Study 2 ( $N=300$ ), fictive male and female dark leader profiles were evaluated by employees based on perceived leadership effectiveness. While there were no

significant differences in the evaluation of narcissistic woman and men leaders, Machiavellian and psychopathic woman leader profiles were evaluated more positively than Machiavellian and psychopathic men profiles.

Results will be interpreted in the light of socialization processes and different role expectations toward men and women leaders.

*„Like moths into the fire”? Can dark triad leaders be both threatening and fascinating?*

**S.J. Diller\*, A. Czibor, E. Jonas**

Private University Seeburg Castle, Austria

Research findings in organizational psychology suggest that the individual level of socially aversive personality traits (subclinical psychopathy, subclinical narcissism and Machiavellianism; so-called dark triad of personality, DT) affect one's career choices and contribute to the emergence of leaders. Leaders with strong DT traits are characterized as selfish, exploitative, manipulative, or even „toxic”; resulting in lower job satisfaction among subordinates, decreased trust in the management and a higher prevalence of workplace bullying. Recent research has paid little attention to the gender-related aspects of these fields.

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Results will be interpreted in the light of socialization processes and different role expectations toward men and women leaders.

13:00 Lunch break

15:00 **Keynote speaker for Hungary – Room: Luisella Sironi U4-8**

**Prof. Ferenc Kocsor**

***Misled by affections: A glimpse into the processing of facial stimuli with eye-tracking and reaction time measurements***

Recognition accuracy of faces can be influenced by stimulating a specific part of the face-space. This effect might be ascribed either to the semantic information which play a role in recollection of memories, the affective information evoked by the presented stimuli, or both. The importance of spreading activation during recognition can be understood in light of several explanatory frameworks, some of which try to explain face recognition effects on different levels: models focusing on semantic networks, trait inference mapping, cognitive processes, and brain anatomy all successfully explain some features of recognition. In an experimental setting words or pictures can be used as priming stimuli, which can differ in

their affective and semantic content. In our studies we intended to reveal the effect of congruency on recognition speed and eye movements, and tried to use the results to integrate previous models. Depending on the type of priming stimuli, length of presentation, and experimental design, affective and semantic incongruency decreased recognition speed and affected fixation times to a different extent. The results confirm the assumption that both spreading activation of associative networks and the affective state evoked by irrelevant stimuli influence face recognition processes, incongruency putting a cognitive load on recognition.

16:00 Coffee break

16:30 Afternoon talks – Room: U4-2  
Chair TBC

*How do we stick to Physical Activity: Is intention sufficient?*

**D. Glavaš\*, M. Pandžić, I. Vrselja, & L. Batinić**

Catholic University of Croatia

This research aimed to explore the mediation role of intention to be engaged in regular physical activity (PA) and PA habits in the relationship between previous weekly PA intensity and PA intensity one month later. A sample of 163 young and middle-aged adults (Mage = 29.86 (10.24), Nfemale = 107) completed the Godin Leisure-Time Exercise Questionnaire at the beginning and the end of a one-month interval. Furthermore, participants completed a scale of PA habit strength and intention to be engaged in the regular PA scale. The results of serial mediation analysis showed a significant positive direct effect of previous weekly PA intensity on weekly PA intensity one month later. Furthermore, the results showed an indirect effect indicating PA habit strength as a significant mediator of this effect. Previous weekly PA intensity predicted higher PA habit strength, which predicted higher weekly PA intensity one month later. On the other hand, the intention to be engaged in regular PA did not mediate this effect. However, the indirect serial effect of previous weekly PA intensity on weekly PA intensity one month later through intention and PA habit strength was statistically significant. We discussed results within the behavioural theories and from a dual-process perspective.

*First experiences with the Hungarian version of the Structured Interview of Personality Organization – Revised (STIPO-R) on a Hungarian clinical sample*

**T.C. Kiss\*, G.Z. Rubovszky, D. Czikora, N. Arató, Z. Demetrovics, & A. Láng**

Doctoral School of Psychology, Institute of Psychology, PTE-BTK, Pécs // Department “Tündérhegy”, OMINT-OORI, Budapest, Hungary

The Department of Psychosomatic and Psychotherapeutic Rehabilitation “Tündérhegy” is an inpatient facility, using a psychodynamic framework. Many of our patients suffer from personality pathology with an underlying malfunction of the personality organization according to Kernberg’s object relations model of personality and personality pathology. The Structured Interview of Personality Organization (STIPO, 2004), and its revised edition (STIPO-R, 2016), developed by Clarkin, Caligor, Stern, Kernberg, are semi-structured interviews aimed at evaluating the structural domains of personality functioning. In 2021, our research group embarked on the endeavor of translating STIPO-R to Hungarian and validating it using a set of questionnaires and interviews – as part of an elaborate research design. Our patients form a cohort sample for this ongoing research, the data collection phase is not yet concluded. We foresee having gathered data from a sample of cca. 140



patients. At the conference we present our first results. Relationship will be discussed with instruments such as Inventory of Personality Organization (IPO), Dimensions of Identity Development Scale (DIDS), Self-concept and Identity Measure (SCIM), Personality Inventory for DSM-5 (PID-5), Level of Personality Functioning Scale Brief Form 2.0 (LoPF-BF 2.0), Structured Clinical Interview for the DSM-5 Alternative Model for Personality Disorders (SCID-5 AMPD).

*Examining the relationship between cognitive flexibility, ICT attitude, and digital competences*

**C. Bali\*, Z. Fehér, G. Várkonyi, N. Arató, B. Lábadi, & A.N. Zsidó**

University of Pécs, Hungary

Using digital technology can be a challenge for many. While there is a growing body of research on the benefits of using digital devices, little is known about the cognitive factors that can help people adapt effectively to the digital environment. Cognitive flexibility is a key feature to adapting unfamiliar circumstances thus it can play a crucial role in learning and using digital devices. Therefore, the aim of our study was to investigate whether cognitive flexibility is related to better ICT (information and communication technology) attitude and more efficient mobile and computer competences. Participants (N=172, M=33.1) filled out a questionnaire and completed two objective measurements of cognitive flexibility. To analyse our data, we used structural equation modelling. SEM analysis showed that cognitive flexibility predicts mobile and computer proficiency through ICT attitude, which is in line with our presumptions. Our data suggests that high level of cognitive flexibility is linked to a more positive ICT attitude and more efficient digital competencies. These results can help us to make easier the adaptation to the digital environment and support people in gaining advantages from it.

17:30 Aperitivo time Milano sightseeing

## Friday Sept. 9

10:00 **Keynote speaker for Austria – Remote – Room: U4-2**

**Prof. Herbert Janig**

***Growing old, not worthless***

Our ideas about growing old and being old are shaped by our family role models, economic, social, medical and other influences. Growing old will not happen in the way we imagine when we are young. We must also acknowledge that our scientific knowledge of old age may not match our personal experiences. Age is not a uniform phase of life, and inter- and intra-individual differences can be very large. Ageism and exceptional examples of old people show us the limits and opportunities of growing old. For our own growing old, the theory of gerotranscendence offers clues as to what makes life in old age valuable and worth living.

11:00 Morning talks – Room: U4-2

Chair TBC

*Leadership style behind protective culture*

**D. Klajkó\*, S. Kázmér-Mayer, & A. Czibor**

University of Pécs, Hungary

Previous studies examined the relationship between organizational culture and employee well-being. Data highlighted advances of the team culture in the case of job satisfaction, the level of perceived stress and commitment. The emerging corporate culture depends primarily on leaders beliefs and behaviours. With the new challenges of the constantly changing labour market, the definition of leadership is also changing. Our research aims to examine the relationship between perceived leadership style (charismatic, ethical, transformational, authentic) and perceived organizational culture (team, adhocracy, market, hierarchy).

We examined primarily which modern leadership style predicts protective team-culture features, such as cooperation, trust, and open communication in the team. We examined employees (N=250) from different Hungarian companies with an anonymous online questionnaire, measuring leadership style, job satisfaction, organizational culture, cooperation, social support, communication, and demographic questions. Statistical analyses show differences between the four perceived leadership styles in terms of job satisfaction, commitment and perceived level of work-related stress. Data also highlight the relationship between organizational culture and leadership style. Our research focuses on practical approaches and results might support leaders who are motivated to build a healthy and protective organizational culture that encourages cooperation and social support.

*Dual or single process conflict resolution*

**M. Dujmović\* & P. Valerjev**

University of Bristol, UK

Classic tasks from the dual-process approach to reasoning pit two (presumably) qualitatively different processes against each other to induce conflict. In this study we aim to investigate how conflict between two heuristics of the same type is resolved. At the start of the task, information about two cohorts equally represented in a group (e.g., 500 mathematicians and 500 boxers) is presented. Next, information that a randomly selected person from the group has two specific character traits (highly-educated and physically strong) is given. Participants had to decide whether the person was more likely a mathematician or a boxer. This example is from a high-conflict condition since the character traits strongly cue opposing responses. Based on pre-studies, we created a 2(conflict/congruent) by 2(high/moderate) experiment in which we recorded participant's (N=113) responses, response times and confidence judgments. As expected, participants were fastest, most confident and most accurate in the high-congruence condition and the opposite is true for the high-conflict condition. Key results reveal there was no significant difference between conditions of moderate congruence and moderate conflict which would be unexpected in a classic dual-process account. This indicates there may be a single-process mechanism which integrates information when same type heuristics are being exploited.

**M. Skorupski, I. Krejtz, & M. Kornacka**

*Validation of the Polish version of Daydreaming Frequency Scale - evidence from psychometric and ecological momentary assessment*

SWPS University of Social Sciences and Humanities, Poland

Daydreaming is a type of cognitive activity, which is unrelated to one's current activity or surroundings – it is considered a form of task-unrelated thought (TUT). Daydreaming

Frequency Scale (DDFS) was the first tool used to measure this phenomenon. A Polish version of DDFS was translated and validated in two studies: the first one (n=385) examining its psychometric properties, the second one (n=214) analysing the relationship between the trait-level DDFS score and actual TUT frequency and controllability in daily life, using ecological momentary assessment. The Polish version of DDFS has an excellent internal validity ( $\alpha = 0.92$ ) and its score is positively correlated with the scores of Perseverative Thinking Questionnaire, Rumination Response Scale, Hospital Anxiety and Depression Scale, the frequency subscale of the Future Self Thought (FST) questionnaire and negatively correlated with the clarity subscale of FST. The factor analysis suggested a two-factor model could be a valid alternative to the original one-factor solution. The two-factor solution may reflect the intentionality dimension of daydreaming. The results from Study 2 suggest that DDFS score is significantly related to the daily occurrence of TUTs and negatively related to the level of control a subject has over his daily occurring TUTs.

12:00 Conference Farewell Address

13:00 Lunch

15:00 For those interested: Visit to art museums in Milano.

## Posters

1 *Preference of meaning and prototypicality: An eye-tracking study*

**B. Arndt\*, A. Illes, & C. Bali**

\*University of Pécs; Moholy-Nagy University of Art and Design, Hungary

Meaning and prototypicality have an important role in aesthetic judgments, as we can see in the classical and current theoretical concepts. In our study we aimed to investigate the processing of prototypicality and meaning in a preference task showed on a remote eye-tracker. Therefore, we created meaningful and meaningless, as well as prototypical and not prototypical images from the same elements for a forced-choice preference test. We pre-tested the images to control how meaningful they are, as well as we identified the prototypical appearance. We asked 52 participants to take part in our study. According to our results, we can say that meaning leads our visual attention, but its effect is highly modulated by prototypicality. Prototypicality dominates the preference choices, as well as it dramatically reduces the viewing time and fixation count used for the preference choice. It seems like it was the well-known, only-good answer, that does not need much cognitive effort to perceive and process. These results can help us to a deeper understanding on the cognitive processing of the meaningful elements in our visual environment.

2 *Impact of COVID-19 pandemic on healthy elders' cognitive functioning and the role of cognitive training as a possible protective factor*

**S. Pegoraro\*, E. Rizzi, S. La Rocca, E. Longo, A. Facchin, & R. Daini**

\*University of Milano-Bicocca, Italy

During the COVID-19 pandemic, the preventive lockdown measures were the only way to manage the health emergency effectively. The elderly population was the most vulnerable in this situation; it was deprived of socialization, living alone for the entire period and modifying their daily activities. In studies before and after the first wave of COVID-19, social isolation has been linked to a worsening of cognitive functioning in healthy people. The protective role of cognitive training, positive and negative effects of behavioural variables (e.g., well-being, anxiety, coping strategies, lifestyle changes), and cognitive reserve were examined to determine their impact on cognitive functioning. Participants (age range between 60 and 80 years), who took part in cognitive training before pandemic, were assessed by a neuropsychological battery in four different periods (i.e., pre-training, post-training, follow-up/pre-lockdown, and post-lockdown). Results show an improvement in participants' cognitive performance after the cognitive training, which persisted after the lock-down, suggesting a long-term, protective role of the cognitive training. Furthermore, an increased interest in taking care of one's own health and in thinking about continuous cognitive improvement promotes good cognitive functioning and amplifies and maintains the benefits of cognitive stimulation.

3 *Stress and burnout in health care workers during COVID 19 pandemic*

**M. Rukavina\* & A. Marinović**

\*University of Bristol, UK

Classic tasks from the dual-process approach to reasoning pit two (presumably) qualitatively different processes against each other to induce conflict. In this study we aim to investigate how conflict between two heuristics of the same type is resolved. At the start of the task, information about two cohorts equally represented in a group (e.g., 500 mathematicians and 500 boxers) is presented. Next, information that a randomly selected person from the group has two specific character traits (highly-educated and physically strong) is given. Participants had to decide whether the person was more likely a mathematician or a boxer. This example is from a high-conflict condition since the character traits strongly cue opposing responses. Based on pre-studies, we created a 2(conflict/congruent) by 2(high/moderate) experiment in which we recorded participant's (N=113) responses, response times and confidence judgments. As expected, participants were fastest, most confident and most accurate in the high-congruence condition and the opposite is true for the high-conflict condition. Key results reveal there was no significant difference between conditions of moderate congruence and moderate conflict which would be unexpected in a classic dual-process account. This indicates there may be a single-process mechanism which integrates information when same type heuristics are being exploited.

4 *The role of empathy in mental and physical health of nursing and teaching students*

**T. Kavčič\* & P. Dolenc**

\*University of Ljubljana, Slovenja

Compared to other professions, nursing and teaching are associated with less favourable mental health, as evidenced by increased levels of stress, anxiety, depression, and burnout. There is some evidence that this is also true for undergraduate students in these fields. The purpose of this study was to examine the role of empathy dimensions in mental and physical health of nursing and teaching students. Participants were 248 nursing and 156 teaching students, aged 19 to 26 years, and predominantly female (89%). They filled in the brief form of the Interpersonal Reactivity Index, which measures four dimensions of empathy: perspective taking, fantasy, empathic concern, and personal distress. In addition, they assessed their well-being with the Short Form of the Mental Health Continuum, stress with the Brief Perceived Stress Scale, anxiety with the Generalized Anxiety Disorder-7, depression with the eight-item Patient Health Questionnaire Depression Scale, and physical symptoms with the Patient Health Questionnaire-15. Results from a series of hierarchical regression analyses indicated a favourable role of perspective taking and empathic concern in students' well-being, whereas personal distress emerged as a risk factor for decreased well-being and increased mental and physical health problems. Findings can have applied value in the education of these professions.

5 *Subjective and objective measures of placebo treatment in pain perception*

**N. Kanceljak\* & D. Ivanec**

\*University of Zagreb, Croatia

The placebo effect in pain perception manifests in reducing pain sensation in situations where participants believe that some (placebo) treatment will have an analgesic effect. The aim of the study was to examine how different placebo manipulation affects two subjective (pain intensity and pain unpleasantness) and two objective (simple reaction time and reaction force) measures of sensory processing. In an experimental study, the pain was evoked by the electrocutaneous stimulation applied to participants' fingers. Participants were divided into one control and two experimental groups. In the first experimental group, placebo manipulation was induced by verbal instruction on the effectiveness of the new analgesic cream. In the second group, in addition to the same verbal instruction, the conditioning process by reducing the intensity without participants' knowledge was added. The results showed that there was no placebo effect at all. There were no statistically significant differences between the control and experimental groups or between the two experimental groups. An apparent effect of the order of measurements was observed on three criteria measures, which could be easily interpreted as a placebo effect if there was no control group. The results clearly indicate that studying the placebo effect is a rather susceptible area.

6 *Acceptance of cosmetic surgery among Hungarian women in the light of objectified body consciousness and obsessive-compulsive behaviour*

**F. Óry\* & N. Meskó**

\*University of Pécs, Hungary

The purpose of cosmetic surgeries is to change the physical appearance or certain physical characteristics to increase the attractiveness of the client. Women often use cosmetic interventions to shape their bodies. The more they internalize the social expectations about their physical appearance, the more they see their bodies as objects. In addition to self-objectification, the organization of personality is also a significant factor in the development of adult women's attitude towards their own bodies. The aim of our study was to examine the attitude of Hungarian women towards cosmetic surgeries and their personal experience with those procedures, in connection with the satisfaction with their own bodies, body-objectification and compulsive personality organization. 770 adult women (M = 30.1 years, SD = 11.3; min = 18 years, max = 71 years) completed our questionnaire package. The data was collected online. Based on our results, the higher level of dissatisfaction with physical appearance, stronger body shame and body surveillance increase openness to cosmetic surgeries, while obsessive-compulsive behaviour does not play a significant role in the attitude towards plastic surgeries. Thus, it seems that in adulthood, negative subjective feelings about one's own body are what primarily motivate women to undergo cosmetic interventions.

## 7 *Two-dimensional Machiavellianism and attachment*

**A. Láng\* & B. Birkás**

\*University of Pécs, Hungary

Previous studies reported a positive association between Machiavellianism and attachment avoidance. In this study we argue for the beneficial use of a two-dimensional approach to Machiavellianism, because (1) it enables the clustering of participants and the application of a person-centred approach; (2) it enables the investigation of the relationship between views and tactics. 617 university students (446 female) participated with a mean age of 27.24 (SD = 9.66). Participants filled out self-report scales of two-dimensional Machiavellianism and adult attachment. Participants in the four emerging clusters could be distinguished regarding their level of attachment avoidance, but attachment anxiety could only distinguish non-Machiavellians from the other three clusters. Moreover, only views (but not tactics) were associated with both attachment avoidance and anxiety. Further, attachment avoidance (but not attachment anxiety) moderated the association between views and tactics. The higher attachment avoidance was, the stronger was the relationship between views and tactics. Our study highlights that Machiavellianism is not only related to attachment avoidance but also to attachment anxiety. However, attachment avoidance seems to play an essential part in turning cynical views into immoral manipulative tactics.

## 8 *The Role of Basic Psychological Needs in Mental Health and Coping with Distance Education*

**F. Balikó\*, K. Csókási, & M. Pohárnok**

\*University of Pécs, Hungary

According to the Self-Determination Theory, basic psychological needs are fundamental to maintaining psychological well-being. The need for relatedness, competence, and autonomy gained greater importance among university students during the months of the COVID-19 lockdown. Our study was aimed at investigating the connection between basic psychological needs and mental health during the period of distance education. We collected data from 12 males and 64 females from different study programs (mean:25, SD:36). Basic Psychological Needs Scale, Beck Depression Scale, STAI, and SWLS questionnaires were used. With cluster analysis, two groups were created based on the global level of well-being. A significant difference was found between the two groups in terms of satisfaction with the need for autonomy,  $t(80)=2,183$ ,  $p<0,05$ , and the need for competence,  $t(80)=3,211$ ,  $p<0,05$ . The quantitative method was complemented with narrative interviews. Thematic episodes supplemented with key life story events illustrate, how the frustration of the needs related to depression and anxiety. The qualitative coding was based on the presence of autonomy, relatedness, and competence episodes, following the satisfaction or frustration of the need. The narrative analysis points to the difference between the two groups in terms of satisfaction and frustration of the three needs, especially the need for intimacy.

9 *The role of helplessness and hopelessness in the physical quality of life of female patients with chronic low back pain*

**S.Á. Teleki\*, I. Nagy, & A.N. Zsidó**

\*University of Pécs, Hungary

The chronic low back pain is more frequent among women, while the subjective pain threshold is also lower among them. This study aimed to examine the possible effect of hopelessness and helplessness in this association, related to the physical quality of life (PhQoL) of female patients with chronic low back pain. This cross-sectional study involved 121 female patients (agemean= 47.9 [SD = 10.9] years). Besides the characteristics of the disease, Beck Hopelessness Scale, SF-36 health survey questionnaire, and Pain Catastrophizing Scale were used, and MIMIC model was applied. The analyses revealed that helplessness and the time since the onset of pain symptoms predicted positively the degree of hopelessness. Hopelessness, in turn, had a negative direct effect on the PhQoL. Moreover, and besides the indirect pathway, helplessness had a direct negative effect on the physical QoL of the patients. Explained variance is 75%. The results showed that elements of pain catastrophizing and the duration of the symptoms increase the feelings of hopelessness, which, in turn, negatively influences the patients' physical quality of life. These results suggest that increasing coping with pain and restructuring the sense of hopelessness can enhance the physical quality of life of women with low back pain.

10 *Beliefs about romantic relationships and sexual attitudes among emerging adults: Are they related to actual relationship status and dating app use?*

**M. Puklek Levpušček & T. Glavač**

\*University of Ljubljana, Slovenja

Recent studies have found changes in romantic relationship (RR) dynamics among emerging adults, such as greater postponement of committed RRs and greater search for new RRs online. In this study, we examined whether one's beliefs about RRs and sexual attitudes were significant predictors of current RR status (in a relationship or single), RR intention (high vs. low), use of dating apps, and number of RRs in one's lifetime. Some demographic variables were also controlled (age, gender, and living situation). 440 Slovenian emerging adults participated in the study (319 female, Mage = 22.78). Using logistic and linear regression analyses, we found that RR dismissal was a significant negative predictor of "in a relationship" status, high relationship intention, and dating via a dating app, whereas RR desire did not significantly predict RR outcomes. Sexual permissiveness significantly predicted dating app use, dating via dating apps, and number of romantic relationships in one's lifetime. Being female, living independently, and having a more instrumental sexual attitude positively predicted "in a relationship" status. Results suggest that certain beliefs about RR and sexual attitudes are related to decisions about actual RR behaviour.



- 11 *Development of a Multidimensional Digital Platform as a Support to Emotion Expression for Children with Autism Spectrum Disorders*  
**E. Chitti\***, **G. De Capitani**, **R. Actis-Grosso**, **P. Ricciardelli**, **F. Ciardo**, **A. Baratè**,  
**L.A. Ludovico**, **F. Avanzini**, & **N.A. Borghese**

\*Univeristy of Milan, Italy

We present a digital platform for a novel multidimensional intervention on recognition and synthesis of emotions through images, music, and animations. Universal emotions of happiness, anger, fear, sadness are considered. For emotion recognition the child chooses a picture representing a given emotion. The pictures are either Picture Exchange Communication System (PECS), or photos of an actor's face or dynamic expressions created morphing a neutral face with a face expressing that emotion, according to the chosen exercise. We explore the role of music to strengthen emotions understanding: at the end of each exercise music tuned to the portrayed emotion is played. For emotion synthesis, the child chooses the emotion felt, they reconstruct the PECS pictogram of that emotion through basic face components (eyes and mouth shape). Upon completion, the animation of PECS pictograms from neutral expression to the expression associated to that emotion is played. The exercises leverage Applied Behaviour Analysis: positive reinforcement at the end of each exercise comes from a virtual tutor, through rich audio and animation graphical feed-back. It has also the role to guide the child through the exercises in an empathic way with synthesized voice, tuned to the actual emotion using Speech Synthesis Markup language.

- 12 *"You are what you eat" – The mediating role of eating disturbances between narcissism and exercise dependence*  
**S.A. Bandi\***, **B. Farkas**, **A. Láng**, **D. Vida**, **Á. Putz**, **A. Czibor**, **G. Csapó**, &  
**L. Nagy**

\*University of Pécs, Hungary

Our study explores the possible connections among the two faces of narcissism, eating disturbances and exercise dependence in general population. Narcissism is empirically connected to exaggerated attention to the self and the body via tendencies of vanity and exhibitionism, which could easily activate maladaptive strategies to the control of body weight and shape. Our hypothesis is that narcissism is connected to exercise dependence and in this process eating disturbances play an important mediating role. The participants of our study (N=255; 73.4% female; M Age=32.5 years; SD Age=12.5) completed anonymous self-report questionnaires of grandiose narcissism, vulnerable narcissism, eating disturbances and exercise addiction, which was analysed by path analysis. Results suggest that eating disturbances have a mediating role between vulnerable narcissism and exercise dependence, whilst grandiose narcissism is independent from all other constructs. Age and gender have a moderating role in the case of narcissism and exercise dependence, but not in the appearance of eating disturbances. Findings highlight the interrelation of narcissistic vulnerability with eating problems and exercise dependence, a novel and relevant result both in the field of personality and clinical psychology, which provides empirical basis for further research and the development of specific prevention and intervention programs.

13 *Effect of dispositional mindfulness on psychological health*

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Background: Dispositional mindfulness (DM) is an important predictor of health, but it is rarely examined together with other health-protective personality traits. Aim of the study was to determine the effects of DM, sense of coherence (SOC) and self-efficacy (SE) on depression and life satisfaction. Methods: A cross-sectional, questionnaire-based study was conducted. Study sample included 396 persons (23% men; age:  $34,65 \pm 14,95$  years; 58,3% married or engaged). Participants completed the Mindful Attention Awareness Scale, Sense of Coherence, General Self-efficacy, Center for Epidemiologic Studies – Depression, and Satisfaction With Life Scale. We conducted two multiple hierarchical regression analyses (Block1: age, gender, Block2: DM, Block3: SE, SOC). Results: Examining the predictors of life satisfaction, DM was a significant predictor ( $R^2=0,152$ ;  $p<0,001$ ), but this relationship became nonsignificant after entering SE and SOC into the model. Regarding depression, DM and SOC were significant predictors in the final model and accounted for a significant amount of variance ( $R^2=0,194$ ;  $p<0,001$ ). Discussion: This study provides further evidence that DM has a significant effect on psychological well-being in terms of depression. DM might have an indirect effect on life satisfaction which is mediated by SE and/or SOC. Future studies could examine the mediating role of these personality traits.

14 *Nothing could compensate the Hungarian nation's soul for the 20th century"- Collective victim beliefs in the Hungarian context*

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The main aim of the research was to investigate collective victim beliefs in the Hungarian context. The main research questions were: (1) What kind of collective victim beliefs are present in the Hungarian context? (2) How are collective victim beliefs related to each other? (3) How important is historical collective victimization for group members? The empirical study was conducted in the framework of a large survey study. In the survey study, 933 participants filled the comparative collective victim beliefs questionnaire. After the questionnaire, participants were asked to answer an open-ended question about the in-group's victimization. 139 participants answered this question. A codebook for content coding was developed, and then the responses were coded. The study demonstrated that the importance of the in-group's historical victimization is debatable among group members. Many participants mentioned inclusive collective victim beliefs. When participants talked about the in-group's historical victimization, they often did it without mentioning any causes or lessons related to this experience. A major theoretical implication is that comparative collective victim beliefs are not as important in the Hungarian context as in previously investigated contexts. In the Hungarian context, most of the answers were related to the subjective importance of the in-group's historical victimization.

15 *Machiavellian Intelligence: New evidence on the evolution of manipulation*  
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In the light of the Machiavellian Intelligence Hypothesis, social intelligence resulted from the successful exploitation of rivals for personal benefits. Natural selection might foster Machiavellian personalities because the skillful manipulation of others conferred an evolutionary advantage. However, some recent empirical findings appear to contradict the expectations of the Machiavellian intelligence hypothesis. People with high scores on Machiavellianism scales perform poorly in mindreading tasks and have a relatively low emotional intelligence. Using experimental games (e. g. Trust game, Public Goods games) we provided supportive evidence arguing that Machiavellian people have cognitive and social skills that enable them to efficiently exploit others. Compared to non-Machiavellians, they show high cognitive and neural skills in social activities such as reward-seeking, task-orientation, nomothetic mentalization, monitoring others, and inhibition of cooperative impulses. In the light of our fMRI experiments, dorsolateral prefrontal cortex, inferior frontalis gyrus, and certain part of thalamus are involved in these abilities. As a result of interaction among these algorithms, the core of Machiavellian strategy is behavioral flexibility that might have been favored by evolutionary mechanisms such as frequency dependent selection akin to an evolutionary arms race.

16 *What makes teachers take the mentor role in a high school mentoring program? Preliminary results of a longitudinal study*

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A recently introduced mentoring program at a Hungarian high school provides the context of the research. The study aimed to discover, what makes high school teachers take the mentor role. The classical roles of teachers are revalued in today's educational context: from formal, informational transfer role to a supportive, collaborative, facilitator mentor-role (Powell, 1995). School mentoring positively impacts students' confidence and performance (O'Sullivan et al.2017), therefore schools and students are both interested in encouraging teachers to take the mentor role. Mentors (N=16) and teachers with non-mentoring roles (N=14) from a high school were participating in a longitudinal study. A questionnaire package was completed by the participants, measuring their personality traits (Réthely S., 2003, Big5 Inventory), organizational wellbeing (Nistor K., 2015,COPSOQ II.) and organizational culture perception (Sarros, 2005, organizational culture profile questionnaire). Mentors and non-mentors showed no significant difference according to their personality traits. Regarding wellbeing and organizational culture, significant differences were found between the two groups. Mentor teachers showed lower levels of organizational wellbeing and a more negative culture perception than non-mentors. Although mentoring tasks mean extra effort for the teachers, this role can be interpreted as an agent's way of coping with unfavorable

organizational conditions.

17 *The role of Moral foundations in the prediction of cheating on the exam*

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Introduction: Moral foundations theory (Haidt, Graham, & Nosek, 2004) assumes that moral reasoning is driven by evolutionarily based reasoning mechanisms. The authors argue there are five moral foundations that are activated when making moral decisions: Care, Justice, Loyalty, Authority and Purity. Moral foundations have not been examined in the context of academic integrity yet. Objective: We examined whether moral foundations could predict the behavioral aspect of cheating on the exam as well as the perception of the acceptability of such behavior, with control of demographic and personal traits. Method: 336 students of the University of Health Sciences in Zagreb were examined, with an average age of 23.72 (SD = 6.34). Moral foundation questionnaire, HEXACO and the Cheating Scale were used as measuring instruments. Results: Two hierarchical regression analysis were conducted. The first analysis did not present moral foundations as significant predictors of the behavioral aspect of cheating, but the second one points out that moral foundations are a significant predictor when it comes to perception of the acceptability of cheating on the exam. Conclusion: Results showed to what extent moral foundations contribute to the readiness to cheat and whether they affect the perception of the acceptability of such behavior.

18 *Pretending sexual joy: How reasons of faking orgasm in women associate with mate retention, sociosexuality and relationship satisfaction*

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While nowadays the different functions of the female orgasm has become general known, yet we still not know how exactly faking orgasm works and why women use this strategy. Therefore, this study was focused to analyze such psychological factors like sociosexuality, mate retention strategies and relationship satisfaction which may contribute to faking orgasm weather it is applied during oral sex, sexual intercourse or in both situations. With the aim, 467 Hungarian female have participated in our online survey and filled in the Faking Orgasm Scale for Women (FOS), the Sociosexuality Inventory (SOI-R), the Mate Retention Inventoriy (MRI-SF) and the Relationship Assessment Scale (RAS). The results were in line with our preliminary expectations. Women who reported faking orgasms are more likely to use other mate retention strategies, less satisfied with their relationships and have more unrestricted sociosexuality. Furthermore, our findings showed that sociosexuality, relationship satisfaction and the use of mate retention strategies are related to the engagement of faking orgasm in different ways. With the SEM-model we could reveal the direct and mediator effects of the integrated factors on the appearance of faking orgasm. Our research will contribute towards better understanding of the faking orgasm in women from a cross-cultural perspective.

19 *Staring and non-staring portraits: the role of pupil highlights*

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Four experiments are presented, the aim of which is to study the role of highlights in perceiving gaze direction in portraits as directed towards the observer. Stimuli were painted portraits from classical artworks and photographic portraits of Hollywood golden age actors. All experiments were conducted online through the platform Qualtrics. In experiment 1, paintings and photographs were presented without manipulations and participants were asked whether the portrait was staring at them or not. This allowed to classify portraits into two categories: 1) clearly staring; 2) ambiguous or not staring. In experiment 2 the same portraits were presented but with 5 conditions in which pupilar highlights were digitally manipulated: original, no highlights, highlights on the left, center or right of the pupils. Participants were asked to rate their impression of being stared at on a 5-point Likert scale. Stimuli and procedure in experiments 3 and 4 were the same as in experiment 2, except for the fact that either the right or the left eye of the portraits were occluded. An inversion of ratings in exp. 2 emerged for photographic portraits in which highlights were deleted. Highlight positions affected ratings for staring in experiments 3 and 4 in different ways.

20 *Investigating anticipatory form of attentional biases using the cVPT paradigm for content related to BII phobia*

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The processing of threatening stimuli is preferred over other stimuli. More recent studies have shown that a neutral stimulus that predicts the location of a threat may allow us to study an earlier form of attentional bias, anticipatory avoidance. In our research, we investigated how attentional bias occurs when exposed to BII-related threatening content (blood, injury, and medical procedures). We used a paradigm with neutral predictive cues to ensure that the biases are due only to anticipatory effects, without any effects from the actual stimulus presentation. We used two differently designed cued visual probe task paradigms. In Experiment 1 (N=33) cues and threatening pictures appeared in the spatial position of the probe, in the corners of the screen. In Experiment 2 (N=32) they appeared in the middle, while the probe still appeared in an off-central position. In both cases, subjects had to indicate the position of the target probe stimulus by pressing the corresponding button. In experiment 1 participants tended to avoid the position of the predictive cue associated with threatening content. In Experiment 2 this effect only appeared on a tendency level. Overall our results suggest that an early anticipatory form of attentional bias occurs when using neutral predictors.

- 21 *Segmental reduction of corpus callosum in relation to cognitive performance in adolescents with perinatal brain injury*

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The aim of this study was to perform a detailed analysis of segmental reduction of corpus callosum (CC) and relate it to cognitive performance in a group of adolescents who suffered perinatal brain injury. Neuropsychological testing and structural brain magnetic resonance imaging were performed in 89 children, aged 13-16 years, who suffered perinatal injury. Cognitive assessment included the Wechsler Intelligence Scale for Children and the Rey-Osterrieth Complex Figure Test (ROCFT). CC was delineated on midsagittal section and segmented into 99 rostrocaudal segments considering the curvature of the CC, allowing a comparison between subjects, regardless of the CC shape. Verbal intelligence quotient (IQ) related to the superior-frontal fibers and superior parietal, posterior parietal, temporal, and occipital fibers of CC. Nonverbal (performance) IQ related to orbito-frontal, anterior-frontal, superior-frontal fibers, parietal, temporal and occipital fibers, implying not only commissural fibers of associative areas, but also motor and somatosensory areas. Results of ROCFT construction task correlated with posterior part (occipital, parietal, and temporal) and superior frontal fibers, while the visuospatial memory task also related to the orbito-frontal fibers. Perinatal injury of periventricular white matter leads to segmental and general reduction of callosum in adolescent age allowing for a connectivity-based explanation of long-term neurocognitive deficits.

- 22 *The impact of comorbidities on health-related quality of life in patients with Parkinson's disease*

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Introduction: Chronic diseases, such as Parkinson's disease (PD), can have a marked impact on health-related quality of life (HRQoL) of affected patients. Previous studies have shown that more severe disease stage is associated with poorer quality of life in PD. We hypothesize that the presence of chronic comorbidities may further worsen HRQoL of PD patients. Methods: We designed a single-center cross-sectional study to investigate the impact of coincidence of chronic comorbidities (hypertension, ischemic heart disease, diabetes, gastrointestinal and urogenital diseases) on HRQoL in different stages of PD. Results: Demographic, clinical and treatment-related data of 400 PD patients were analyzed. We measured HRQoL at different stages of PD defined by the Hoehn-Yahr Scale using the 39-item Parkinson's Disease Questionnaire, the 12-Item Short Form Survey, the 5-level EQ-5D, the Schwab and England Activities of Daily Living Scale, the Clinician Global Impression of Severity Scale, and the Patient Global Impression of Severity Scale. The HRQoL was compared among different PD stages also considering the number of chronic comorbidities. Conclusion: Our study confirms that HRQoL of PD patients deteriorates with disease severity. This may be further worsened by additional chronic comorbidities, therefore, holistic patient care and attention to comorbidities may be of high importance.

23 *Who wrote this text?*

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Women are under-represented in STEM (Science, Technology, Engineering, Math)(UNESCO 2017), as they are deemed as less competent than men (i.e., gender-science stereotype). We aimed at testing whether some well-known gender stereotypes –as “dumb blonde” (i.e., blond individuals, especially women, are considered as more dumb or naive)- could explicitly affect the gender-science stereotype, and if and how they interact. To this aim we manipulated pictures of (a) a woman (Exp.1) and (b) a man (Exp.2), by modifying (i) hair-colour (brown, black, blond); (ii) hair-length (long, short) (iii) make-up (Exp.1: none, light or heavy make-up, as combined with (i) or beard (Exp.2: no beard, unshaved or bearded), (iv) glasses (present, absent). In this way we obtained 36 pictures for each Experiment (3x3x2x2), which were presented twice, once associated with an abstract and once with a novel. Participants (n=164.) are requested to evaluate, on a 10 points Likert scale, the level of probability of the authorship. Preliminary results (with a repeated measures ANOVA) show that the authorship of the scientific abstract is associated with a lower likelihood to women wearing heavier make-up and blond hair, no matter if long or short, while no effect has been found for men.

24 *Predictive role of personality traits in academic integrity*

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Introduction: Academic dishonesty is a rarely researched phenomenon in Croatia. We examined the most common reasons for cheating and avoiding cheating in test situations. We were also interested in the extent to which personality traits contribute to various aspects of dishonest behaviour such as cheating on exams, accepting such behaviour and attitudes toward such behaviour. Method: 331 students of the University of Health Sciences in Zagreb participated. HEXACO and Cheating Scale measuring instruments were used. Results: Among the most common reason for cheating is poor exam control while fear of being caught is responsible for avoidance. A series of regression analyses were conducted to examine the predictive role of personality traits in different aspects of cheating in test situations. All regression analyses were statistically significant, with the greatest emphasis on Honesty as the personality trait that plays the most significant role. Low scores on Honesty and Conscientiousness contribute to cheating on the exam itself. Students with a higher degree of Honesty and Agreeableness show more negative attitudes toward cheating. Conclusion: Personality traits significantly contribute to aspects of cheating on the exam, but the results show that individual contributions of personality traits are differently distributed on aspects of cheating.

25 *Differences in psychological, social and health exercise motives of University of Zagreb students with regarding leisure-time physical activity level*

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Background. Influencing physical activity (PA) level should be public health system priority and by identifying and understanding individual variables, together with social, cultural and environmental factors that are potentially connected to PA level, is basis for developing successful interventions. Aim of this research is to determine whether there are differences in psychological, social and health exercise motives of University of Zagreb students with regard to leisure-time PA level. Methods. Participants were 1304 University of Zagreb students (857 female, 447 male), average age 20,72 years. Croatian version of IPAQ, which measures adult PA, and Croatian version of EMI-2, which measure 14 exercise motives, were used. Using factor analysis, from 14 exercise motives 3 higher order factors were extracted (psychological, social and health exercise motives). Participants were divided in low, moderate and high PA level groups. Findings. Physically most active students were more motivated by psychological and social exercise motives then those who were in moderate and low PA level groups. There were no difference in health exercise motives regarding students PA level. Discussion. Understanding students motivation differences with regard to their leisure-time PA level is really important when it comes to creating intervention programs that aim to increase student population PA.

26 The role of sound in sport stadiums: are home advantage and referee bias still present in matches behind closed doors?

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The home advantage and the subconscious referee bias are common in professional sports. Although different factors might account for them, spectators' support is probably the most relevant. Nonetheless, it is difficult to observe its contribution in isolation from the other factors during actual matches. The numerous matches played behind closed doors due to COVID-19 allowed to systematically study the effects of the absence of spectators' support in an ecological context. We investigated whether these two phenomena still occurred – and to what extent – in matches without spectators. We considered outcome and performance variables for the home advantage (e.g., points earned and shots, respectively), as well as variables for the referee bias (e.g., cards and extra time). Data from 841 matches played in the late 2019/2020 season for the top four UEFA countries revealed a significant reduction of home advantage compared to the three previous seasons, as well as the absence of referee bias (Sors et al., 2021). The data of the present study, retrieved from the 2020/2021 season (3,898 matches), confirmed that the crowd noise significantly contribute to the dynamics and the outcomes of professional football matches.



