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## CONTENTS

THE MEDIATING ROLE OF PSYCHOLOGICAL WELL-BEING IN THE RELATIONSHIP BETWEEN THE PSYCHOLOGICAL CONTRACT AND PROFESSIONAL ENGAGEMENT <i>Sedat Alev</i> .....	227
THE ABILITY TO EXPERIENCE MIXED EMOTIONS IN CHILDREN AGED 5 TO 10 YEARS <i>Miljana Spasić Šnele &amp; Mila Guberinić</i> .....	245
THE LIGHT AND THE DARK SIDE OF SOCIAL MEDIA USE: DEPRESSION, ANXIETY, AND EATING ATTITUDES AMONG ADOLESCENTS <i>Alois Ghergut, Alexandra Maftei, &amp; Ana Nicoleta Grigore</i> .....	269
THE BODY-OWNERSHIP IS UNCONSCIOUSLY DISTORTED IN THE BRAIN: AN EVENT-RELATED POTENTIAL STUDY OF RUBBER HAND ILLUSION <i>Aitao Lu, Xuebin Wang, Xiuxiu Hong, Tianhua Song, Meifang Zhang, &amp; Xin Huang</i> .....	297
THE TIME, THE PATH, ITS LENGTH AND STRENUOUSNESS IN MAZE LEARNING <i>Senka Kostić &amp; Oliver Tošković</i> .....	313
EVENT-RELATED POTENTIALS REVEAL EARLY VISUAL-TACTILE INTEGRATION IN THE DEAF <i>Siyi Liu, Aitao Lu, Haiping Tian, Yuexin Cai, Meifang Zhang, Tianhua Song, Guisheng Chen, &amp; Dianning Qu</i> .....	329



# The Mediating Role of Psychological Well-Being in the Relationship Between the Psychological Contract and Professional Engagement\*

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This study was conducted using structural equation modelling to examine the relationship between the psychological contract, psychological well-being, and professional engagement. The sample of the study included 416 teachers who were selected using a disproportionate cluster sampling method from primary and middle schools in Turkey. In analysing relations between variables, mediation testing was performed using the structural equation model and the bootstrap method. The results of this study showed that professional engagement is both directly and indirectly affected via psychological well-being by the psychological contract. How teachers perceive the psychological contract is an important variable that shapes their psychological well-being and professional engagement. Accordingly, school administrations should meet these teacher expectations and display attitudes and behaviours that encourage teachers to take active roles in school-related decisions, thereby further increasing the professional engagement of their teachers.

*Keywords:* teachers, psychological contract, psychological well-being, professional engagement

## Highlights:

- In the study, the antecedents of professional engagement were examined.
- Psychological contract and well-being affects teachers' professional engagement.
- Well-being mediates the relationship between psychological contract and professional engagement.

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# The Ability to Experience Mixed Emotions in Children Aged 5 to 10 Years\*

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The main aim of this study was to examine children's ability to verbally report experiencing allocentric mixed emotions in 60 children aged 5 to 10 years from three age groups – preschool, second and fourth grade. Five short video-clips from the animated movie “Dumbo”, in which the protagonist experiences mixed emotions, were used as a stimulus in the study, followed by an interview with the children, while their parents completed the Empathy Quotient questionnaire to assess the child's empathy. The results showed a developmental progression in children's ability to experience mixed emotions – the fourth-grade students were shown to be more successful compared to the two younger groups. Age was a statistically significant predictor of experiencing mixed emotions, whereas empathy was not. Gender differences in experiencing mixed emotions were not found, but there was a difference in the dynamics of the development of this ability between the genders. Findings were interpreted from a developmental-cognitive perspective, according to which the ability to integrate opposite valence emotions, as two conceptually different representation sets, develops with age.

*Keywords:* emotional development; mixed emotions; empathy; children

## Highlights:

- Experiencing mixed emotions develops gradually in children aged 5 to 10 years.
- The understanding of mixed emotions precedes their experience.
- The development path of experiencing mixed emotions is different for boys and girls.

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## The Light and the Dark Side of Social Media Use: Depression, Anxiety, and Eating Attitudes among Adolescents\*

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In the current study, we explored the links between social networking activity, eating attitudes (EA), anxiety, and depression among adolescents. We used a cross-sectional design. Our sample consisted of 532 males and females, aged 12 to 15 ( $M = 13.55$ ,  $SD = 0.90$ ), from the Eastern side of Romania. We analyzed our data using three different pathways to explore these relationships on the overall sample, as well as the at-risk for eating disorders (ED) group ( $n = 134$ ), and the non-ED-risk ( $n = 398$ ) samples. The results suggested that depressive and anxiety symptoms partially mediated the relationship between social networking and eating attitudes in the overall group and in the not-at-risk for ED group, but not in the at-risk for ED sample. When controlling for gender, social networking use partially mediated the relationship between anxiety and depressive symptoms and eating attitudes in the overall group and the not-at-risk for ED group, and a total mediating effect within this relationship in the at-risk ED sample was also found. In adolescents with symptoms of potential ED, social networking use seemed to have a protective role compared to the not-at-risk sample. The present study suggested that social networking use might increase the chances of developing unhealthy eating attitudes in adolescents who are not-at risk to develop an eating disorder, but, at the same time, it might play a protective role (instead of a harmful one) for adolescents who already developed such symptoms. Results are discussed concerning their clinical and practical implication for adolescents' physical and mental health, especially during the COVID–19 pandemic, and the potential protective role of social media use for adolescents with ED symptoms.

*Keywords:* adolescents, eating attitudes, eating disorders, social networking, depression, anxiety

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**Highlights:**

- One in four adolescents reported symptoms of a potential eating disorder (ED).
- Compared to males, female adolescents had higher levels of unhealthy eating attitudes (EA), depression (DEP), and anxiety (ANX) symptoms.
- DEP and ANX symptoms partially mediated the link between social networking use (SN) and EA overall.
- EA significantly predicted SN and ANX symptoms.
- EA significantly predicted DEP symptoms in females only.
- In the at-risk sample, SN might have a protective role.



# The Body-ownership is Unconsciously Distorted in the Brain: An Event-related Potential Study of Rubber Hand Illusion\*

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Many studies have reported that bottom-up multisensory integration of visual, tactile, and proprioceptive information can distort our sense of body-ownership, producing rubber hand illusion (RHI). There is less evidence about when and how the body-ownership is distorted in the brain during RHI. To examine whether this illusion effect occurs preattentively at an early stage of processing, we monitored the visual mismatch negativity (vMMN) component (the index of automatic deviant detection) and N2 (the index for conflict monitoring). Participants first performed an RHI elicitation task in a synchronous or asynchronous setting and then finished a passive visual oddball task in which the deviant stimuli were unrelated to the explicit task. A significant interaction between Deviancy (deviant hand vs. standard hand) and Group (synchronous vs. asynchronous) was found. The asynchronous group showed clear mismatch effects in both vMMN and N2, while the synchronous group had such effect only in N2. The results indicate that after the elicitation of RHI bottom-up integration could be retrieved at the early stage of sensory processing before top-down processing, providing

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*Note.* Aitao Lu and Xuebin Wang contribute equally to the article.

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evidence for the priority of the bottom-up processes after the generation of RHI and revealing the mechanism of how the body-ownership is unconsciously distorted in the brain.

*Keywords:* rubber hand illusion, body-ownership, visual mismatch negativity, ERP

### **Highlights:**

- Bottom-up integration could be retrieved at the early stage of sensory processing.
- Bottom-up processes precede top-down process when generating RHI.
- RHI can automatically affect bodily and social perception.

# The Time, the Path, its Length and Strenuousness in Maze Learning\*

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Previous findings show that rats in a maze tend to choose the shortest path to reach food. But it is not clear whether this choice is based on path length solely, or some other factors. The aim of this experiment was to investigate which factor dominates the behavior in a maze: path (longer and shorter), time (longer and shorter), or effort (more or less strenuous). The experiment involved 40 mice (4 groups), learning a maze with two paths. Each group went through only one of the situations within which we kept one factor constant on two paths while the remaining two factors were varied. Only in the fourth situation all factors were equalized. The results show that there is a statistically significant difference in the maze path preference between four situations. Preference between the paths is such that mice always choose paths requiring less effort.

*Keywords:* maze learning, cognitive maps, maze path length, time needed to exit the maze, effort required to exit the maze

## Highlights:

- Effects of time taken to reach the goal were separated from path length during maze learning in mice.
- Effort required from a mouse to reach the goal was added as another factor for path choice in maze learning, which might be confounded in previous studies with path length.
- Dimensions of the path length, time and effort required to reach the goal in the maze were systematically varied.

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- Results clearly indicate that effort required to reach the goal is more important than time or path length for route choice in maze learning.
- Mice do not choose shortest or fastest route; they clearly choose least effortful route in order to reach the goal in maze learning.

## Event-related Potentials Reveal Early Visual-tactile Integration in the Deaf\*

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This study examined visual-tactile perceptual integration in deaf and normal hearing individuals. Participants were presented with photos of faces or pictures of an oval in either a visual mode or a visual-tactile mode in a recognition learning task. Event-related potentials (ERPs) were recorded when participants recognized real faces and pictures of ovals in learning stage. Results from the parietal-occipital region showed that photos of faces accompanied with vibration elicited more positive-going ERP responses than photos of faces without vibration as indicated in the components of P1 and N170 in both deaf and hearing individuals. However, pictures of ovals accompanied with vibration produced more positive-going ERP responses than pictures of ovals without vibration in N170, which was only found in deaf individuals. A reversed pattern was shown in the temporal region indicating that real faces with vibration elicited less positive ERPs than photos of faces without vibration in both N170 and N300 for deaf, but such pattern did not appear in N170 and N300 for normal hearing. The results suggest that multisensory integration across the visual and tactile modality involves more fundamental perceptual regions than auditory regions. Moreover, auditory deprivation played an essential role at the perceptual encoding stage of the multisensory integration.

*Keywords:* hearing loss, visual-tactile interaction, perceptual encoding, multisensory integration, event-related potential

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**Highlights:**

- Multisensory integration across the visual and tactile modality involves more fundamental perceptual regions than auditory regions.
- Auditory deprivation played an essential role at the perceptual encoding stage of the multisensory integration.