

PROCEEDINGS OF THE  
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CONFERENCE

# EMPIRICAL STUDIES IN PSYCHOLOGY

MAY 13– 16<sup>th</sup>, 2021

FACULTY OF PHILOSOPHY, UNIVERSITY OF BELGRADE

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

# EMPIRICAL STUDIES IN PSYCHOLOGY

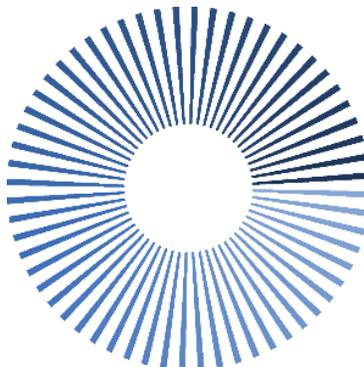
MAY 13 – 16<sup>th</sup>, 2021

FACULTY OF PHILOSOPHY, UNIVERSITY OF  
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Institute of Psychology, Faculty of Philosophy, University of Belgrade



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Belgrade, 2021

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TUNING FORKS (E. Zimmermann, Leipzig – Berlin)

Instruments for generating tones of a given frequency. They are used in studies of auditory sensitivity for determining the differential, absolute and upper thresholds. Figure shows a set of three tuning forks generating the C-major chord, each fork generating the tones of 256 Hz (c<sup>1</sup>), 320 Hz (e<sup>1</sup>), and 384 Hz (g<sup>1</sup>) respectively. The forks were tuned to the pitch of the originals from the German Physico-Technical Imperial Institute (Phys.-techn. Reichsanstalt).

# CONTENTS

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<b>COGNITIVE PSYCHOLOGY</b>	<b>8</b>
Impact of the Visual Characteristics of the Stimulus on the Stroop Effect <i>Čatak, Bakić, Borojević</i>	9
Effect of Visual Degradation on the Processing of Latin and Cyrillic Words <i>Antešević, Borojević</i>	12
<b>CLINICAL PSYCHOLOGY</b>	<b>15</b>
Prognostic Value of Various Factors of Perfectionism in Explaining Anxiety <i>Vlašić</i>	16
<b>PERSONALITY PSYCHOLOGY</b>	<b>19</b>
Dark Tetrad: The relationship with parenting style <i>Dimoski</i>	20
Development, psychometric characteristics and validation of questionnaire for emotion regulation strategies assessment (DPS) <i>Damnjanović, M., Devedžić, Tešić, Popović, Mihojević</i>	24
Adolescent personality traits as predictors of aggressive behavior <i>Živković, Pavićević, Stanojević</i>	27
Preliminary psychometric characteristics of the Short Subtypes of Antisocial Behavior Questionnaire (s-SABQ) <i>Wertag, Dinić, Pavlović</i>	29
Mapping the Dark Core of personality within the space of value orientations: Psychometric properties and factor structure of Serbian translation of D-70 <i>Nedeljković, Opačić</i>	32
Self-Concept Differences Among Offenders, Drug Addicts, Students And Mensa Members <i>Nedeljković, Opačić</i>	36

Latent structure and predictors of the ‘common sense’ opinions and beliefs about corporal punishment of children <i>Subotić, Sibirčić</i>	39
Empathy of the devil: Sex differences in the Dark Tetrad and empathy <i>Wertag, Ribar, Sučić</i>	42
<b>PSYCHOLOGY OF EDUCATION</b>	<b>46</b>
Education during the Covid-19 lockdown – Experiences of Roma students from substandard settlements in Belgrade <i>Milutinović, Mitrović, Simunović</i>	47
Parenting Styles And Life Stressors As Predictors Of Cyber-Aggression And Cyber-Victimization Among High School Students <i>Pavlović, Sadiković, Šuvalić, Simić, Subotić</i>	51
GPA, Personality, And Attitudes Towards Science As Predictors Of The High School Students’ Mathematical Literacy <i>Štrkonjić, Karanović, Mihaljčić, Vukliš, Marinković, Keleman, Rašović, Nedić, Petković, Lugonja, Subotić</i>	54
<b>WORK PSYCHOLOGY</b>	<b>58</b>
Work interference with personal life and Turnover Intention: Mediating Role of Job Satisfaction <i>Mirković</i>	59
<b>DEVELOPMENTAL PSYCHOLOGY</b>	<b>62</b>
Body Image and Its Correlates: PISA 2018 Study in Serbia <i>Stamenković, Miložičić, Videnović</i>	63
Adolescents’ Well-Being and Typical Patterns of Their Leisure Time Behaviors <i>Vuletić, Krnjaić, Grujić</i>	66
Psychometric Characteristics of the Test of Emotion Comprehension (TEC) in Serbian-Speaking Children from Bosnia and Herzegovina <i>Pašić, Bjelić, Lakić, Tutnjević</i>	69
Feeling „In Between“: Emerging Adulthood, Secondary Separation and Individuation, and Identity Formation <i>Trbojević, Petrović, Zotović Kostić, Janković</i>	72

Relation Between the Affective Valence of Words and the Affective Valence of Their Associative Fields in Different Age Groups <i>Mađarev, Štulić, Ilić, Janković</i>	76
<b>PSYCHOLOGY OF ART</b>	<b>79</b>
Assessment of Affective Experience in Relation to Color and Familiarity of Stimulus <i>Vicanović, Borojević</i>	80
<b>PERCEPTION</b>	<b>83</b>
Target/Distractor Size Ratio And Illusory Contours Visual Search Efficiency <i>Stajkić, Gvozdenović</i>	84
<b>SOCIAL PSYCHOLOGY</b>	<b>87</b>
Content Analysis of Newspaper Headlines Related to the Coronavirus Epidemic in the Period Before and After the 2020 Parliamentary Elections in Serbia <i>Gvozden, Stamenković, Mitrović, Draginić, Miličić, Žeželj</i>	88
Emotional Climate among Prisoners and Prison Officers <i>Sučić</i>	91
Determinants of Self-Reported Depressive Affect in Serbia: Results from a Nationally Representative Sample <i>Mentus, V.</i>	95
The effects of framing of descriptive norms on donating behavior <i>Devedžić, Damnjanović, M., Popović, Bjelogrić</i>	98
Judging identities based on historicity: Discriminative validity of Ethnic identity delegitimization scale <i>Ninković, Žeželj</i>	100
Communication of civic information predicting civic knowledge and participation in youth <i>Lep, Zupančič</i>	103

*COGNITIVE PSYCHOLOGY*

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# Impact of the Visual Characteristics of the Stimulus on the Stroop Effect

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## Abstract

Stroop effect is based on interference between color of word and color of font. Reading words is an automatic process and is faster than naming the color of a word. The aim of this research is to examine the Stroop effect and the automaticity hypothesis if there is only a partial mismatch between the name of the color and the color in which the word is written (partially incongruent stimuli, with the first three or last three letters being incongruent). The sample consisted of 72 participants. One factor was varied - the visual appearance of the stimulus with four levels (congruent, incongruent, partially incongruent anterior and partially incongruent posterior stimuli). The dependent variable was the reaction time and the number of errors. Results show that there is an effect of experimental manipulation on the reaction time. Stroop effect was strongest when first three letters were incongruent with written word.

**Keywords:** Stroop effect, visual characteristics, congruent stimuli, non-congruent stimuli

## Introduction

The Stroop effect is a cognitive phenomenon that is reflected in the inhibition of the response in the task of naming colors when the name of the color is incongruent with the color with which the word is written. Such cognitive interference occurs when the processing of one stimulus characteristic affects the simultaneous processing of another attribute of the same stimulus (Stroop, 1935). It refers to a prolonged response time when the color in which the word is written is not congruent with its semantic meaning.

This effect is based on the interference between reading the word in color and the perception of the color of the font. The process of reading words is an automatic process, ie an unintentional, fast and uncontrolled that requires minimal cognitive engagement (Kostić, 2010; Moors & Houwer, 2006), and that process is faster than naming the properties of words (MacLeod, 2015). When there is a conflict between these two sources of information, our cognitive load increases and more engagement is needed to resolve that difference. Performing multiple operations, such as reading inhibition, word color processing, and information conflict resolution, slows our responses and prolongs reaction time.

The automatic reading hypothesis was tested in a study using fully colored stimuli and stimuli where one letter was

colored and the rest were gray (Besner, Stolz, & Boutilier, 1997). The results of this study showed that stimuli with a single colored letter reduced the Stroop effect compared to fully colored stimuli. The assumption that words are automatically processed to activate the semantic level was not confirmed (single-coloured-letter stimulus should produce at least as much Stroop effect as completely colored words, but this is not obtained). The difference between naming colors and reading words is also explained in the way that faster processes can affect slower ones, but not the other way around (Dyer, 1973; Cohen, Dunbar, & McClelland, 1990). Therefore, since words are read faster than colors are named, interference occurs when the task is to name a color and ignore the word. If the word matches the color it will make it easier to give an answer to the naming of the color, and if the word “conflicts” with the color (incongruent situation) its impact must be “overcome” in order to generate the correct answer which leads to longer response time (ie. interference) for the color naming process.

The aim of this study was to examine the intensity of the Stroop effect if there was only a partial mismatch between the name of the color and the color with which the word was written (partially incongruent stimuli). We chose to examine the effect of incongruence of the first three letters in a word based on the research findings on the preferred landing position in reading (McConkie, Kerr, Reddix, & Zola, 1988). The incongruence of the last three letters would then be the opposite of that position and could have a different effect in the Stroop task.

## Method

### Sample

Total of 72 students participated in the experiment. All the subjects were students at two departments (Psychology and Pedagogy) at the Faculty of Philosophy in Banja Luka. Subjects were randomly divided into four equal groups that corresponded to the experimental condition.

## Design and Procedure

One factor was varied - the *visual appearance* of the stimulus with four levels (congruent, incongruent, partially incongruent anterior and partially incongruent posterior stimuli). Partially incongruent stimuli were stimuli in which the first three or last three letters are in a different color from the color the word represents. An example of stimuli is shown in Figure 1.



Figure 1. Examples of stimuli in experiment

Factor was not repeated by participants. The classic Stroop task was used in the experiment. Participants were asked to select the color of the presented stimulus (word) by pressing the appropriate key. Five colors were selected: red, green, blue, purple, and brown. Each word appear in all other colours in incongruent condition. Every word-color combination was repeated twice. All participant went through 40 trials and additional 5 trials for practice.

## Results

Results show that there is an effect of experimental manipulation on the reaction time ( $F(3,2875) = 23.109, p < .001, \eta^2 = .024$ ). Scheffe post hoc analysis showed that the average response time was shortest for congruent stimuli (952.9 ms), then for incongruent stimuli (1097.3 ms) and partially incongruent stimuli in which the last three letters were opposite to the written word (1070.6 ms), while the longest response time present in partially incongruent stimuli in which the first three letters are opposite to the written word (1182.3 ms). Those results are shown on Figure 2.

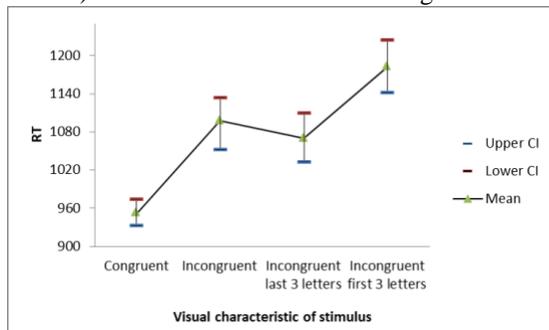


Figure 2. Reaction time depending on the visual characteristic of stimulus

Analysis of the number of errors shows that there is no statistically significant effect of the visual characteristics of the stimulus ( $F(3,2875) = 1.492, p > .05, \eta^2 = .002$ ).

## Discussion and conclusion

Stroop task is one of the most commonly used tasks to test the reading automaticity hypothesis. This process is fast, unwilling and ballistic. According to this hypothesis, it is sufficient to simply present the word in order to activate its semantic processing. Testing this hypothesis, Besner and co-workers (Besner, Stolz, & Boutilier, 1997) showed that displaying a word in which only one letter is colored significantly reduced the Stroop effect. This study examines the occurrence of interference in the case where the beginning or end of a word is colored differently. The obtained results show that Stroop effect is most pronounced in partially incongruent stimuli in which the first three letters are opposite to the written word. On the other hand, the interference is the same for completely incongruent stimuli and partially incongruent stimuli where the last three letters are opposite to the written word. These results are not fully consistent with the findings of Besner et al. (Besner, Stolz, & Boutilier, 1997). There was no reduction of the Stroop effect, but even an amplification in the case of the incongruence of the first part of the word. Although the presence of a word on a display or visual field generally always activates its semantic representation in long-term memory (Brown, Gore, & Carr, 2002), such an obligatory process can be shaped or delayed. It has been established that the type of task and the mental set, and even the way of answering (verbally or manually) significantly influence the automatic recognition of words (Risko, Stolz, & Besner, 2005). The same authors found an important role of attention, especially spatial. In conditions of high attentional load or directing attention, limitations of word recognition can be observed. Such findings may explain the stronger interference in the case of words in which the first three letters are colored differently. Attention is actively focused on the beginning of the word in an attempt to identify it. This is supported by the fact that the place where the eyes first fixate in a word during continuous reading, called the preferred landing position. This position is usually located halfway between the beginning and the middle of the word (McConkie, Kerr, Reddix, & Zola, 1988; Radach & Kempe, 1993). These were the first three letters in this study. Initiated processing of the first part of the word encounters inconsistency with the remaining part, which leads to interference. The result is prolonging the reaction time for this category of stimuli which implies stronger Stroop effect.

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# Effect of Visual Degradation on the Processing of Latin and Cyrillic Words

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## Abstract

The word processing begins with visual discrimination and accurate identification of individual letters. Letter processing is based on perceptual processing of their integral features. It was founded that not all features have the same importance in that process. The aim of this research is to examine importance of specific features in recognition Serbian words written in two different alphabets – Cyrillic and Latin. In different experimental situations 60 words and 60 pseudo-words were presented in isolation in the task of lexical decision. 37 subjects, who first learned Cyrillic alphabet and did not have preferred alphabet, took part in the experiment. Unexpectedly, results showed that the reaction time for processing Cyrillic and Latin words degraded at the junction level is shorter than for non-degraded words. The results can be partially explained by the interactive activation model.

**Keywords:** visual degradation, word processing, Latin, Cyrillic

## Introduction

In Serbian language, the same word can be written using one of the two simultaneously utilized alphabets, Cyrillic and Latin. A review of previous research indicates that there are differences in their processing (Vejnović & Jovanović, 2012; Vejnović, Dimitrijević, & Zdravković, 2011; Pašić, 2004). Some studies have examined visual level of description in word recognition and it's relation to phonological level. It was determined that fluent readers do not give preference to the visual word-specific strategy. Subjects can not eliminate the phonological strategy, even when it was detrimental for performance (Feldman, 1981). The findings also suggest that word recognition in the terms of phonology is independent of lexical entries, and is sensitive to component orthographic structure (Feldman & Turvey, 1983). On the other hand, there is a series of research in other languages that is completely focused on the visual aspect of word recognition based on feature analysis (Coltheart, Rastle, Perry, Langdon, & Ziegler, 2001; McClelland & Rumelheart, 1981). Their main assumption is that features are basic level in process of activation of word-level representations. The model that best explains this view is interactive activation model. According to this model, the processing of information during reading includes three levels (feature level, letter level and word level). Information can go in both directions, from lower to higher level and from higher to lower. There are excitatory and inhibitory two-way connections between each of the two levels (McClelland & Rumelheart, 1981; Rumelheart & McClelland, 1982). Since the processing begins with

features, the question is whether different types of features are equally important in letters and words recognition. One way to test this is to degrade or hide them and record processing speeds. The main idea of such procedure is that removing the specific visual part of feature that are important for the identification, will reduce the processing efficiency. In studies conducted in other languages, it was determined that the ends (terminal parts) of lines represent important features for recognizing individual letters. Horizontal lines are also important components in recognition, although their influence was smaller. This can be explained by the fact that they are not present in every letter (Fiset, Blais, Arguin, Bub, & Gosselin, 2008). In experiments conducted by Lanthier and co-workers (Lanthier, Risko, Stolz, & Besner, 2009), it was found that removing the junctions in isolated presented letter has a more negative effect on processing speed than removing the middle parts. But, in an experiment in which there was no time limitation in stimulus exposure, the junctions and middle parts of the letter lines were of equal importance.

Our research seeks to examine the degradation effect on Latin and Cyrillic word processing. Specifically, the main goal of the study is to determine whether same feature is equally important for both Latin and Cyrillic letters and words recognition. The focus is on junctions because they indicate the relations between parts of letter. If junctions contain key information for recognition, their removal should make word processing significantly slower.

## Method

### Participants

Thirty-seven subjects, students of the University of Banja Luka, participated in the experiment. All participants reported that Cyrillic was the first alphabet they learned, as well as that they used both alphabets equally in reading and writing. All subjects had normal or corrected to normal vision.

### Materials and Design

Two factors were varied in the experiment - *alphabet* (Cyrillic, Latin) and *visual degradation* (degradation at the line junctions, absence of degradation). The lexical decision task was used. The stimuli were 6-characters long words and pseudo words; words were masculine nouns in the nominative singular. All stimuli were written in lowercase in Arial font 48. Examples of stimuli are shown on Figure 1.

## Procedure

The subjects were shown stimuli on a computer screen. Their task was to answer whether a stimulus was a word or a pseudo-word. Participants were divided into four groups according to the type of shown stimuli: Latin non-degraded and degraded stimuli and Cyrillic non-degraded and degraded stimuli. The total number of trials for each participant was 120 (60 words and 60 pseudo-words) with 6 additional trials for the exercise. Both reaction time and the percentage of errors were measured. Experimental session lasted approximately 15-20 minutes per participant.



Figure 1. Examples of stimuli

## Results

The effect of visual degradation on word processing speed was observed ( $F(1,2216)=56.119, p<.001, \eta^2=.026$ ). Effect of alphabet was not statistically significant ( $F(1,2216)=.897, p>.05$ ). With Scheffe post hoc analysis average reaction time were classified into two groups - (1) degraded Cyrillic words (830.2 ms), degraded Latin words (831.1 ms) and (2) non-degraded Cyrillic words (909.1 ms), non-degraded Latin words (933.6 ms).

Contrary to the initial assumption, the reaction time for processing degraded words was shorter than for non-degraded ones. The same effect is present in both Latin and Cyrillic words (Figure 2).

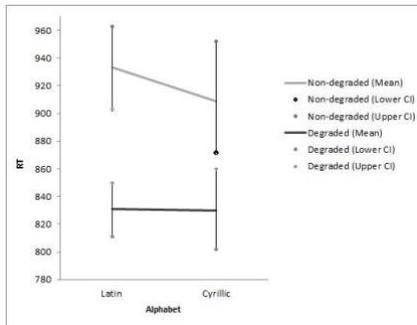


Figure 2. Reaction time depending on the alphabet and visual degradation of words

The same analysis was done for pseudowords. The effect of degradation on reaction time was not obtained in pseudowords ( $F(1,2216)=2.048, p>.001$ ), but there was statistically significant effect of alphabet ( $F(1,2216)=50.475, p<.001, \eta^2=.023$ ). A statistically significant interaction between the manipulated factors was also obtained

( $F(1,2216)=27.759, p<.001, \eta^2=.013$ ). Degraded Latin pseudowords were processed faster than nondegraded. On the other hand, the reaction time is significantly longer for processing degraded Cyrillic pseudowords compared to non-degraded (Figure 3).

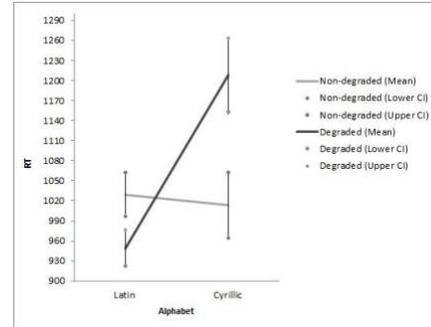


Figure 3. Reaction time depending on the alphabet and visual degradation of pseudo words

In terms of accuracy, the obtained results showed a similar pattern. In the word processing analysis, only effect of degradation on the accuracy of the answer was obtained ( $F(1,2216)=28.056, p<.001, \eta^2=.013$ ). More errors were present in degraded words than in non-degraded ones. Contrary to that, there is no effect of degradation on accuracy in the processing of pseudo words, but the effect of alphabet was statistically significant ( $F(1,2216)=64.046, p<.001, \eta^2=.029$ ). The obtained results also showed a significant interaction of degradation and alphabet ( $F(1,2216)=8.7856, p<.01, \eta^2=.004$ ). More errors were observed in degraded Latin pseudo words.

## Discussion and conclusion

The word processing begins with visual discrimination and accurate identification of individual letters. It was found that efficient letter processing is based on perceptual processing of their individual features, wherein all the features do not have the same significance. This study examined the effect of degradation at the junctions of letter lines on the processing speed, assuming that they could be important sources of information needed to identify letters. We also wanted to examine whether this feature is equally significant for recognition of Latin and Cyrillic letters and words. Although it was expected that the processing will slow down, the results showed just the opposite. Degraded words, both Latin and Cyrillic, are processed faster than whole words. The negative effect of degradation appeared only in Cyrillic pseudo-words. The results can be partially explained by the interactive activation model. According to this model, the processing of words includes three levels – feature, letter and word level. The flow of information starts at the feature level where the basic visual feature of each letter in the word is detected (McClelland & Rumelhart, 1981). Then excitatory or

inhibitory activation spreads to hierarchically higher levels. This model also explains the effect of word superiority, which refers to the fact that people recognize letters faster and easier if they are presented in words than when they are presented in isolation (Rumelhart & McClelland, 1982). At the lowest level of features, it is possible that this type of degradation activates the perceptual principle of closure that contributes to the spread of excitatory activation and speeds up processing of words. Similar results were obtained by Lantier et al. (2009). They found that removing junctions in individual letters significantly slowed down the recognition time. However, when such degraded letters were part of the whole word, such a detrimental effect was not observed. The results obtained on the pseudo words differ for two alphabets. The processing time pattern is repeated for Latin words, but in case of Cyrillic pseudo words degradation slowed reaction time.

Although the results of this study did not confirm the initial assumption, future studies should examine the degradation effect on words with different frequency as well as the degradation effect of different features on words processing.

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*CLINICAL PSYCHOLOGY*

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# Prognostic Value of Various Factors of Perfectionism in Explaining Anxiety

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## Abstract

Perfectionism, operationalized by the Frost Multidimensional Perfectionism Scale, consists of 6 factors: Concern over Mistakes, Organization, Parental Expectations, Personal Standards, Doubts about Actions, and Parental Criticism. The study aims to examine the predictor contribution of perfectionism factors to the occurrence of anxiety. The sample consisted of 189 subjects (37% with an anxiety disorder), aged  $38 \pm 9.3$ . The results revealed that only 2 predictors make a significant independent contribution (Concern over Mistakes and Doubts about Actions). The characteristics of anxious people are negative thoughts and preoccupation with oneself, reflected in Concern over Mistakes and Doubts about Actions. The results suggest that the influence of significant others isn't significant predictor to the onset of anxiety. These results imply that in psychotherapy, we should focus on the client's negative thoughts, self-confidence, and acceptance of his mistakes.

**Keywords:** Anxiety Disorder; Perfectionism; Concern over Mistakes; Doubts about Actions; Parental Expectations and Criticism

## Introduction

Perfectionism is conceptualized as a combination of setting extremely high standards and tireless self-criticism in the pursuit of those standards (Frost, Marten, Lahart & Rosenblate, 1990). It is a multidimensional personality construct related but not similar to other personality dimensions. It cannot be minimized or characterized simply as a form of neurotic conscientiousness (Flett & Hewitt, 2019).

Perfectionism is a paradox. Many performers find themselves in contexts that require perfect performance; but if they are too focused or guided to be perfect in self-conscious ways, then it represents a vulnerability that can impair performance and limit future success (Flett & Hewitt, 2005, 2014). The dominant discourse is a multidimensional model of perfectionism that develops through a complex combination of genes, upbringing, personality, and experience (Starley, 2019).

### Positive Outcomes of Perfectionism

As an adaptive aspect of perfectionism, Personal Standards include setting high standards and goals for oneself and are associated with adaptive indicators of psychological well-being, such as task enjoyment, positive affect, and satisfaction (eg Gaudreau, Franche & Gareau, 2016; Gaudreau & Werner-Fillion, 2012; Stoeber & Rambow, 2007). Both perfectionist tendencies and achievement goals have independent and, in some cases, common relationships with adaptive outcomes in students (Lee & Anderman, 2020).

### Negative Outcomes of Perfectionism

When viewed from an interpersonal perspective, perfectionists appear to be a problem for other people and

vice versa. (Flett & Hewitt, 2019). There is strong evidence that perfectionism poses a greater risk than benefit to the individual (Starley, 2019).

Unadjusted perfectionism moderates the relationship between acceptance of superhero ideals and unhealthy attitudes about nutrition only for girls, so acceptance of superhero ideals was significantly associated with unhealthy eating attitudes for adolescents with high levels of unadjusted perfectionism (Dour & Theran, 2011). Unadjusted perfectionism in adolescents with eating disorders significantly predicts the pathology of eating disorders but not the ideal body weight (Welch, Agras, Lock & Halmi, 2020).

A meta-analysis using a random-effects model found that perfectionist concerns (socially prescribed perfectionism, concern over mistakes, doubts about actions, inconsistency, perfectionist attitudes), perfectionist aspirations (self-directed perfectionism, personal expectations), and parental criticism show a positive correlation with suicidal intent. Perfectionist concerns, parental criticism, and parental expectations have shown small, positive associations with suicide attempts (Smith, Sherry, Chen et al., 2017). Missildine (1963) notes that many perfectionists are very successful, yet they perceive successes as failures because of their enduring dissatisfaction and feeling that they are capable of better work.

Meta-analyses have provided insight into a wide range of negative outcomes associated with perfectionism, including psychopathology (Limburg, Watson, Hagger, & Egan, 2017), suicide (Smith, Sherry, Chen et al., 2018), anorexia (Dahlenburg, Gleaves, & Hutchinson, 2019) and bulimia (Kehayes, Smith, Sherry, Vidović and Saklofske, 2019). Other studies document the role of perfectionism as a detriment to coping with physical challenges such as cancer (Trudel-Fitzgerald et al., 2017) and cardiac illness (Shanmugasegaram et al., 2014). Some meta-analyses have assessed the relationships of perfectionism with rumination and worry (Xie, Kong, Yang, & Chen, 2019), burnout (Hill & Curran, 2016), narcissism (Smith et al., 2016), and procrastination (Sirois, Molnar, & Hirsch, 2017). A meta-analysis, using a random-effects model, found that concern over mistakes, self-doubt, and personal standards, but not socially prescribed perfectionism or self-directed perfectionism, show significant low positive relationships with anxiety (Smith, Vidovic, Sherry, Stewart, & Saklofske, 2017).

Accordingly, the study aims to examine the predictor contribution of 6 perfectionism factors to the occurrence of anxiety. The assumption is that the factors of maladaptive perfectionism Concerns over Mistakes, Parental Complaints, Parental Expectations, and Doubts about Actions are significant predictors of anxiety while factors of adaptive perfectionism Personal Standards and Organization are not significant predictors of anxiety.

## Method

The cross-sectional study was conducted online in February 2021.

### Sample

A total of 189 participants aged 20-72 ( $38 \pm 9.3$ ; 82,5% female) participated in the research. Seventy surveyed participants (37%) have an anxiety disorder (diagnosed by a specialist of psychiatry).

### Instruments

**Frost's Multidimensional Scale of Perfectionism (MPS-F, Frost et al., 1990)**, Croatian translation, is a 35-item, 5-point Likert (1 to 5) scale measuring 6 dimensions of perfectionism: Concern over Mistakes (CM; 9 items), Personal Standards (PS; 7 items), Parental Expectations (PE; 5 items), Parental Criticism (PC; 4 items), Doubts about actions (D; 4 items), and Organization (O; 6 items). The subscales in this study show satisfactory internal consistencies ( $\alpha = 0.77 - 0.93$ ).

**Socio-demographic and health data questionnaire** is used in the study to obtain data about age, gender and diagnosed anxiety.

## Results

Binary logistic regression was performed, with 6 factors of perfectionism as predictors and anxiety/health as a criterion. The model explained between 15.1% and 20.6% of the total anxiety variance.

Table 1: Results of binary logistic regression.

	B	S.E.	Wald	df	p	Exp(B)
CM	-,07	,03	4,07	1	,044	,94
D	-,13	,06	4,89	1	,027	,88
PE	,05	,04	1,12	1	,291	1,05
PC	-,09	,08	1,54	1	,215	,91
PS	,05	,04	1,60	1	,206	1,05
O	-,07	,04	3,29	1	,070	,93

The results of binary logistic regression (Table 1) show that only 2 out of 6 predictors, made a significant independent predictor contribution, namely Concerns over Mistakes (Exp (B) = 0.94,  $p < 0.05$ ) and Doubts about actions (Exp (B) = 0.88,  $p < 0.05$ ). On the other hand, Parental Expectations and

Parental Criticism, as well as Personal Standards and Organization had no effect on anxiety.

## Discussion and Conclusion

This study examined the predictor contribution of 6 perfectionism factors to the occurrence of anxiety, diagnosed by a specialist of psychiatry. The assumption was that the factors of maladaptive perfectionism would have a significant independent predictive effect on criterion anxiety/health, yet only two out of four maladaptive perfectionism factors (CM and D) proved to be significant predictors while the other two factors (PC and PE) had to significant effect. The other part of the assumption was that factors of adaptive perfectionism (PS and O) would not have a significant predictor effect on anxiety, which proved correct.

The cognitive theory says the characteristics of anxious people are negative thoughts and self-preoccupation, reflected in the factors Concern over Mistakes and Doubt about Actions. Parental expectations and Parental Complaints couldn't predict anxiety disorder, suggesting that the influence of relevant others is not proven to be the key to the onset of anxiety. Organization and Personal Standards have no statistically significant predictor contribution to the occurrence of anxiety. These results are of practical importance providing information that in psychotherapy we should not focus on working on (un) realistically high personal standards or organizing everyday life, but on working with negative thoughts and self-confidence, as well as our performance. Also, in the context of cognitive-behavioral therapy, knowing how common cognitive distortion catastrophization in anxiety disorders is, psychotherapists should aim at decatastrophizing mistakes. Besides increasing the number of respondents, authors of future research should use some of the standardized anxiety scales. Also, it would be useful to compare perfectionism as a four-dimensional and six-dimensional construct, concerning anxiety. Additional research is needed.

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*PERSONALITY PSYCHOLOGY*

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# Dark Tetrad: The relationship with parenting style

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## Abstract

Dark Tetrad is a constellation of four personality traits responsible for socially aversive behavior – Machiavellianism, narcissism, psychopathy and sadism. The aim of the present study was to explore the role of parenting styles in predicting Dark Tetrad traits. In addition, important demographic variables were included in the study (gender and age). A total of 256 participants ( $M_{AGE} = 23.63$ ,  $SD_{AGE} = 5.58$ , 22% male) completed two inventories – Short Dark Tetrad and Parent Style Inventory. Results show that mother's low Responsiveness can predict Psychopathy, while low Autonomy-granting can predict Machiavellianism. Father's low Autonomy-granting can predict Psychopathy and Sadism. Male gender is a significant predictor - males showed higher scores on every Dark Tetrad trait. These findings suggest that there are relations between Dark Tetrad and parenting styles, and are largely in compliance with previous research. Out of all parenting style variables, Autonomy-granting seems to be the most important one in terms of both frequency and intensity of correlations with Dark Tetrad traits, which is discussed in terms of an impact parent-child conflict over child's autonomy has during and after adolescence.

**Keywords:** Dark Tetrad; parenting style; personality; social environment

## Introduction

Dark Tetrad consists of four personality traits responsible for socially aversive behavior – Machiavellianism, narcissism, psychopathy and sadism (Paulhus, Buckels, Trapnell, & Jones, 2020). They measure subclinical manifestations and are distributed in “normal” population (Paulhus, 2014).

Although highly heritable, dark traits are subject to influence of environmental factors (Vernon, Villani, Vickers, & Harris, 2008). The aim of this study is to explore their relationship with parenting styles, that can be partly considered a social environment. Parenting style is defined as “a constellation of attitudes toward the child that are communicated to the child and that, taken together, create an emotional climate in which the parents' behaviors are expressed” (Darling & Steinberg, 1993, p. 488 as cited in Darling & Toyokawa, 1997, p. 2).

Previous research stated that having cold and rejecting mothers (Stead, 2012) and psychological control (Horton & Tritch, 2013) are related to narcissism; low care and high control are related to psychopathy (Blanchard, Lyons, & Centifanti, 2016), while neglect is related to Machiavellianism (Láng & Lénárd, 2015). Low parents' emotional warmth is related to psychopathy and Machiavellianism, while permissive behavior is related to antisocial behavior (Liu, Meng, Pan, Ma, & Zhang, 2019).

In addition, male gender and younger age are shown to be related to Dark Tetrad traits (Craker & March, 2016; Hudek-Knežević, Kardum, & Mehić, 2016).

The aim of this study is to examine the relationship between Dark Tetrad traits and mother's and father's parenting style, and to examine the predictive role of parenting styles. Participants' gender and age are included in the analyses as well. While previous studies focused mainly on parental emotional warmth (e.g. Liu et al., 2019; Stead, 2012), the main contribution of the present study would be broadening the examined domains of parenting style, mainly by including previously rarely examined autonomy-granting.

## Method

### Subjects

Total sample consisted of 256 participants ( $M_{AGE} = 23.63$ ,  $SD_{AGE} = 5.58$ , 22% male), from which 2% and 7.8% didn't have mother and father (respectively) but had vivid memory of them and stated that they can take part in the study. Participants were recruited online through social media *Facebook*, and the sample was convenient. Informed consents were collected.

### Inventories

The participants completed two inventories: Short Dark Tetrad (28 items; Paulhus et al., 2020): Machiavellianism (It's not wise to let people know your secrets), Narcissism (People see me as a natural leader), Psychopathy (People often say I'm out of control) and Sadism (I enjoy watching violent sports) and Parent style Inventory (15 items for each parent; Darling & Toyokawa, 1997): Responsiveness (My mother/father spends time just talking to me), Autonomy-Granting (My mother/father respects my privacy) and Demandingness (If I don't behave myself, my mother/father will punish me).

## Results

Most inventories showed acceptable reliability, which can be seen in Table 1, along with an overview of the descriptive statistics.

Table 1: Descriptive statistics

	<i>M</i>	<i>SD</i>	$\alpha$
Responsiveness (M)	4.15	0.86	.82
Autonomy-granting (M)	4.05	0.84	.79
Demandingness (M)	2.98	0.69	.54
Responsiveness (F)	3.70	1.02	.84
Autonomy-granting (F)	3.96	0.86	.77
Demandingness (F)	2.96	0.79	.62
Machiavellianism	2.86	0.75	.68

Narcissism	2.66	0.84	.77
Psychopathy	1.88	0.65	.72
Sadism	1.82	0.70	.76

Correlations between predictors are shown in Table 2. There are significant correlations between parenting styles, making the analysis with both mother’s and father’s parenting styles together more suitable. On the other hand, age and gender did not correlate with any of the measures of parenting styles.

Table 2: Correlations between predictors

	R (F)	A-G (F)	D (F)	Gender	Age
R (M)	.27**	.14*	-.02	.02	-.11
A-G (M)	.12	.30**	-.13*	-.08	-.03
D (M)	-.00	-.11	.31*	.01	.09
Gender	-.00	-.01	-.02	/	-.02
Age	.04	-.04	.11	/	/

Notes. R – Responsiveness; A-G – Autonomy-granting; D – Demandingness; \* $p < .05$ ; \*\* $p < .01$

An overview of the results of the correlational analysis is given in Table 3. Machiavellianism is negatively related to mother’s Responsiveness, Autonomy-granting and father’s Autonomy-granting; and positively to father’s Demandingness. Narcissism is positively related to father’s Responsiveness. Psychopathy is negatively related to mother’s Responsiveness and Autonomy-granting and father’s Autonomy-granting. Sadism is positively related to father’s Demandingness and negatively to father’s Autonomy-granting. Gender is negatively related to every Dark Tetrad trait, while age showed no significant correlations.

Table 3: Correlations between Dark Tetrad and parenting styles.

	M	N	P	S
Responsiveness (M)	-.14*	-.03	-.21**	-.09
Autonomy-granting (M)	-.25**	-.07	-.17*	-.08
Demandingness (M)	.05	-.00	.02	-.00
Responsiveness (F)	-.12	.13*	-.03	.00
Autonomy-granting (F)	-.23**	.07	-.12*	-.23**
Demandingness (F)	.13*	-.05	.07	.14*
Gender	-.21**	-.21**	-.22**	-.38**
Age	-.02	-.03	.07	-.10

Notes. M – Machiavellianism; N – Narcissism; P – Psychopathy; S – Sadism; \* $p < .05$ ; \*\* $p < .01$

To examine exclusive relations between the Dark Tetrad and parenting styles, a regression model based on the zero-order correlations showed above was tested. Parenting styles and gender served as predictors, and Dark Tetrad traits were set as criteria variables (Figure 1). Mother’s low Responsiveness can predict Psychopathy and low Autonomy-granting Machiavellianism. Father’s low Autonomy-granting can predict Psychopathy and Sadism. Male gender predicted every Dark Tetrad trait. The model demonstrated an acceptable fit [ $\chi^2(24) = 22.968, p = .522, CFI = 1.00, TLI = 1.00, RMSEA = 0.00$  (pclose = .959), SRMR = 0.04,]. A total of 13, 5, 9 and 20 percent of variance in Machiavellianism, Narcissism, Psychopathy and Sadism, (respectively) was explained.

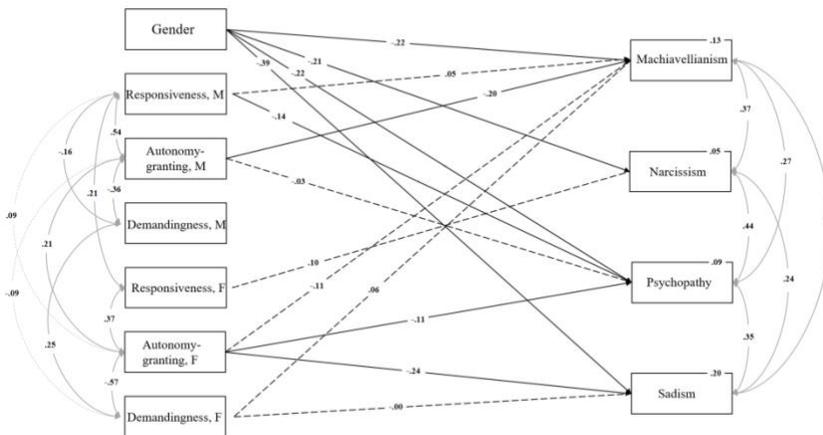


Figure 1: Regression model of the Dark Tetrad and parenting styles.

## Discussion and conclusion

The aim of this study was to examine the relationship between Dark Tetrad traits and mother's and father's parenting style and to examine the predictive power of parenting styles in predicting dark traits.

Machiavellianism can be predicted by mother's low Autonomy-granting. These findings are partly in line with previous, finding correlations between Machiavellianism and overprotectiveness (Láng, 2018).

Narcissism wasn't predicted by any parenting style variable. This is not in line with previous research connecting Narcissism with cold (Stead, 2012) and controlling (Horton & Tritch, 2013) parental behavior, but there were previous contrary results regarding Narcissism and its relationship with parenting styles (Jonason, Lyons, & Bethell, 2014), so deeper examination of this trait is needed.

Psychopathy can be predicted by mother's low Responsiveness and father's low Autonomy-granting which is in line with previous research associating Psychopathy with low maternal care and warmth (Blanchard et al., 2016; Liu et al., 2019), while low Autonomy-granting is related to delinquency (Thornberry & Krohn, 2005) which can be a characteristic of Psychopathy.

Sadism can be predicted solely by father's low Autonomy-granting. Sadism is chronologically the youngest (Buckels, Jones, & Paulhus, 2013), so its relationship with different constructs were least examined. It appears that sadistic children more often have fathers who do not support the child's privacy and who make the decisions for the child.

Gender was found to be a strong predictor for every Dark Tetrad trait, which is in line with previous research (Craker & March, 2016; Hudek et al., 2016). Some authors suggested that it's the matter of psychological gender roles (Jonason & Davis, 2018), but more comprehensive examination is needed.

Previously rarely examined autonomy-granting seems to be an important aspect of parenting style. In adolescence, frequent conflicts over child's autonomy occur between parents and the child, sometimes resulting with child's delinquent behavior, but if these conflicts are resolved, delinquent behavior decreases (Thornberry & Krohn, 2005). It may be plausible to suggest that if conflicts continue to occur even after adolescence and/or in an intensive manner, this may contribute to the development and maintenance of dark traits.

This study is not without limitations – the sample was convenient and both the gender and age distributions were biased toward young females; measures of parenting styles were obtained from their offspring, which may not be accurate and precise description. So, to increase the generalizability of findings on the relationship between parenting styles and dark traits, future research should address these limitations.

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# Development, psychometric characteristics and validation of questionnaire for emotion regulation strategies assessment (DPS)

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## Abstract

Emotion regulation refers to strategies used in order to modulate emotions. The aim of this study was to construct an instrument that would assess usage of those strategies. Participants ( $N = 605$ , 80.2% female, aged 15-44) filled out the DPS questionnaire that encompassed three subscales. Throughout EFA, three expected factors were extracted, interpreted as Reconsideration ( $\alpha = .79$ ), Suppression ( $\alpha = .76$ ), and Distraction ( $\alpha = .75$ ). High correlations with correspondent strategies measured with ERQ and COPE inventory and low correlations with five personality traits assessed by 50-IPIP questionnaire suggest good convergent and divergent validity. Results indicate that DPS has expected factor structure and good psychometric properties.

**Keywords:** emotion regulation; coping strategies; questionnaire construction; questionnaire validation

## Introduction

Emotional regulation (ER) refers to strategies that people use in order to amplify, maintain or reduce the intensity of emotions (Koole, 2009). Influential ER model proposes five broader groups of ER strategies that differ depending on the possibility of their usage during the emotion generative process (Gross, 1998, 1999, 2001). Strategies can be used at the point of selecting or avoiding situations that provoke a particular emotion, modifying these situations, redirecting attention from emotions, changing the way of thinking about situations that caused emotions or changing the concrete behaviour that emotions caused. They are similar to coping strategies, except that they are not only used to regulate stress (Gross, 1998) and they appear to have a weak linkage with personality traits (Gross & John, 2003). Taking that only two of the strategies derived from the model are operationalized – Cognitive Reappraisal and Emotion Suppression (Gross & John, 2003) – the aim of this study was to construct and validate an instrument that would assess usage of all five types of ER strategies proposed by the model, strictly focusing on the regulation of negative emotions.

## Pilot study

One specific strategy was chosen as a representative for each of the five points when strategies can be applied – Avoidance, Modification, Distraction, Reappraisal and Suppression. Initial item-pool consisted of 80 items (16 items per subscale) and it was piloted on a sample of 676 participants (72.3% female, age range 15-41). Criteria for item retention in the final instrument were chosen based on obtained indices of item representativeness, reliability, validity and adequate item fit, by choosing the best subset of items within each subscale. After the exclusion of items demonstrating poor psychometric properties, the final questionnaire consisted of 56 items. However, since subscales of Avoidance ( $\alpha = .67$ ) and Modification ( $\alpha = .65$ ), even after selecting the best subsets of items showed poor psychometric characteristics, they were excluded from the main study which focused on validation and examination of psychometric properties of the three remaining strategies.

## Method

### Sample and procedure

The survey was administered via QualtricsXM online software, while the sample consisted of 605 voluntary participants (80.2% female), aged 15-44 ( $M = 18.69$ ,  $SD = 2.71$ ), with 8-20 years of education completed ( $M = 11.60$ ,  $SD = 2.28$ ). Informed consent was obtained from all participants in the study.

### Measures

DPS represents a self-report questionnaire consisting of subscales Distraction, Reappraisal and Suppression that respectively have 10, 12 and 14 items. Answers are given on a 5-point Likert scale (1 - Strongly Disagree, 5 - Strongly Agree).

Emotional Regulation Questionnaire ERQ (Gross & John, 2003), used as a convergent validation measure, is a self-report scale composed of 10 items that assess two emotional regulation strategies – Cognitive Reappraisal (6 items;  $\alpha = .80$ ) and Emotion Suppression (4 items;  $\alpha = .73$ ). Items are rated on a 7-point Likert scale (1 - Strongly Disagree, 7 - Strongly Agree).

COPE Inventory (Carver et al., 1989) contains 15 scales (4 items each) which assess coping practices. Items are rated on a 4-point Likert scale (1 - I usually do not do this at all, 4 - I usually do this a lot). We used three COPE subscales - Positive Reinterpretation ( $\alpha = .68$ ), Mental Disengagement ( $\alpha = .45$ ) and Venting Emotions ( $\alpha = .77$ ). These subscales were used to assess convergent validity for Reconsideration, Distraction and Suppression respectively.

50-item International Personality Item Pool Representation of Big-Five Structure IPIP-50 (Goldberg et al., 2006) was used as a divergent validity measure. This inventory assesses 5 basic personality traits: Extraversion ( $\alpha = .87$ ), Neuroticism ( $\alpha = .86$ ), Openness to experience ( $\alpha = .82$ ), Agreeableness ( $\alpha = .82$ ) and Conscientiousness ( $\alpha = .79$ ), each represented with 10 items that are rated on 5-point Likert scale (1 - Strongly Disagree, 5 - Strongly Agree).

## Data analysis

DPS factor structure was examined throughout exploratory factor analysis (EFA) in SPSS software (SPSS, v. 25) using *Principal Axis factoring* method and *Promax* rotation. Horn's parallel criterion was used when deciding on the number of retained factors (*R-Studio*, *Paran* package, v. 1.5.2; Dino & Dino, 2018), as well as Cattell's scree plot (SPSS, v. 25). Psychometric characteristics of subscales were obtained using *rtt10g* macro (Knežević & Momirović, 1996), while convergent and divergent validity was examined through Pearson's correlations (SPSS, v. 25).

## Results

### Factor analysis

Although Horn's criterion initially proposed a 6-factor solution, the eigenvalues obtained on the matrix of randomly

generated responses were almost equal to the empirically obtained eigenvalues after factor that was third in order (mean difference was .104). These results corresponded to Cattell's Scree plot which showed a steep decrease in eigenvalue after the third extracted factor. Therefore, the EFA was conducted again in the initially described manner, only this time the number of factors-to-be-extracted was fixed to three. The distributions of factor loadings in the pattern matrix indicated a three-factor solution that corresponded to the initial hypothesis. The first factor named Reconsideration accounted for 12.55% of the total variance and it refers to changing the way of thinking about the situation that caused negative emotion. Second extracted factor named Suppression accounted for 10.94% of the total variance and it implies inhibition of emotion expressive behaviour. The last factor named Distraction accounted for 7.85% of the total variance and it refers to shifting attention from negative emotion to side activities that are not linked to emotion. Distraction correlated significantly with Reconsideration ( $r = .18, p < .01$ ) and Suppression ( $r = .24, p < .01$ ), while the latter two factors appear to be orthogonal ( $r = .008, p > .05$ ). Descriptive parameters of raw summary scores and psychometric characteristics of subscales are shown in Table 1. Data were additionally transformed using Blom's normalization formula in order ensure data normality for future analyses.

### Convergent and divergent validity

Correlations in Table 2 suggest that factor scores had highest correlations with correspondent ER and/or coping strategies measured with ERQ and COPE inventory. That is, Reconsideration highly correlated both with Cognitive Reappraisal and Positive Reinterpretation, Suppression with Emotion Suppression and Venting emotions, while Distraction highly correlated with Mental Disengagement. Reconsideration further correlated significantly with all basic personality traits, Suppression with Agreeableness, Neuroticism, Extraversion and Openness to experience, while Distraction correlated significantly with Extraversion and Conscientiousness.

Table 1: Descriptive parameters of sum scores and psychometric characteristics of DPS instrument

	<i>M</i>	<i>SD</i>	<i>zSk</i>	<i>zKu</i>	<i>KS</i>	<i>KMO</i>	Cronbach's Alpha	<i>H5</i>
Reconsideration	38.50	8.77	-1.66	-1.27	.05**	.91	.79	.84
Suppression	40.41	9.07	-.06	-1.28	.04*	.88	.76	.65
Distraction	34.16	6.90	-3.88**	-1.34	.06**	.92	.75	.65

Note. *M* = mean; *zSk* = standardized skewness; score; *zKu* = standardized kurtosis; *KS* = Kolmogorov-Smirnov statistic; *KMO* = Kaiser-Meyer-Olkin measure of sampling adequacy; *H5* = homogeneity statistic; \*  $p < .05$ ; \*\*  $p < .01$

Table 2: Correlations between factor scores and scores on ERQ, Cope and IPIP-50 subscales

	CR	ES	PR	MD	VE	E	A	C	N	O
Reconsideration	.56**	-.08*	.54**	.15**	.04	.14**	.19**	.23**	-.20**	.09*

Suppression	.08	<b>.69***</b>	-.02	.16**	<b>-.50**</b>	-.19**	-.13**	.00	-.18**	.09*
Distraction	.22**	.14**	.13**	<b>.43**</b>	.01	.09*	.05	.21*	.00	.05

Note. CR = Cognitive Reappraisal; ES = Emotion Suppression; PR = Positive Reinterpretation; MD = Mental Disengagement; VE = Venting Emotions; E = Extraversion; A = Agreeableness; C = Conscientiousness; N = Neuroticism; O = Openness to experience; \*  $p < .05$ ; \*\*  $p < .01$

## Discussion

EFA showed that DPS measures theoretically assumed factors that were interpreted as Reconsideration, Suppression, and Distraction. High correlations between Reconsideration and Suppression with Cognitive Reappraisal and Emotion Suppression suggest that factors really do represent tendencies towards using strategies that were proposed by ER model (Gross & John, 2003). In addition, Distraction proved to be weakly and positively correlated with other two dimensions of ER, showing that it represents a distinct ER strategy. Moreover, relatively high correlations between three ER factors and corresponding coping strategies were obtained, which as expected proved to be lower in magnitude than those of the corresponding ERs. These results show that ER strategies assessed by DPS are indeed similar to coping mechanisms, but should not be identified with them. Taken together, results suggest good convergent validity of DPS. Although few of statistically significant correlations between all three factors and different personality traits were registered, all of these correlations were low in magnitude suggesting that ER strategies are related to personality traits to a certain extent, but are far from being reducible to broad personality dispositions, as earlier suggested (Gross & John, 2003). These results also imply good divergent validity of DPS. More so, measures of internal consistency suggest that DPS precisely measures individual differences in usage of these strategies, indicating that the instrument can be used in future studies regarding ER. Since two of the initial subscales, Avoidance and Modification, didn't meet the minimum psychometric criteria in order to be included in the current study and as there is no instrument that measures ER strategies beyond Cognitive Reappraisal and Emotion Suppression, we suggest that future research should focus on developing new items that would represent the ER strategies that weren't covered by this study, while also examining the construct validity of newly developed subscales. Also, future studies should also ensure a more balanced sample structure, since presented results

may be biased due to a large majority of women. Once being able to measure a wider range of ER strategies on a more representative sample, it is essential to examine their efficiency and the effects that their usage has on one's wellbeing.

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# Adolescent personality traits as predictors of aggressive behavior

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## Abstract

The aim of the research was to determine the predictive power of personality traits explained through Zuckerman's alternative five-factor personality model in predicting aggressive adolescent behavior conceived according to the DSM IV classification of mental disorders of the American Psychiatric Association. 205 respondents of both sexes, aged 14 to 18, participated in the research. Data collected using the instruments: Aggression Scale for Children and Adolescents and the Zuckerman-Kulman Personality Questionnaire. The results of the research showed that people who are characterized by aggression as a personality trait and lower tendency to impulsive search for sensations will be more prone to outbursts of anger, quarrels with adults, anger, opposition to authority demands, aggressive behavior that causes harm to people or animals, breaking the rules, repeated and permanent victimization of peers. As a result, people who show a higher degree of impulsive search for sensations and sociability will not find themselves in the role of a victim in peer relationships. The obtained findings are in line with previous research which shows that personality traits - the search for sensations and aggression, predict the appearance of aggressive behavior.

**Keywords:** personality traits; aggressive behavior; adolescents.

## Introduction

Insight into the connection between personality traits and aggression can provide information useful for the prevention, but also the treatment of aggressive behavior. The subject of this research is to determine the connection between personality traits and aggressive behavior of adolescents. In recent years, personality has been one of the most important constructs studied in psychology (Medjedovic, 2009). Several studies in the field of individual differences indicate the existence of a connection between basic personality traits and aggressive behavior (Vukosav, Glavina Jelas, & Sindik, 2018). As part of decades of research into the construct of searching for sensations, Zuckerman focused his own scientific interests on discovering and understanding the nature of basic personality traits and conceived a model of basic personality dimensions, which are biologically determined, known as the Alternative Five-Factor Personality Model (AFFM). The dimensions of the Alternative Five-Factor Zuckerman and Kulman model are Activity, Aggression, Impulsive Sensation Seeking, Anxiety

/Neuroticism, and Sociability (Zuckerman, Kulman, Joireman, & Kraft, 1993). Activity refers to the need for general activity, impatience and anxiety in situations where there is no possibility of the need manifesting as well as the tendency to challenging and difficult activities that require investment of energy and effort. Aggressiveness / hostility includes a tendency towards verbal aggression, abusive, reckless or antisocial behavior, malice and intolerance towards others. Impulsive search for sensations includes a tendency towards excitement and unpredictable situations, the need for constant changes and innovations as well as a tendency towards impulsive behavior with reduced ability to plan actions. Neuroticism / anxiety refers to emotional distress, constant tension, anxiety, obsessive indecision and sensitivity to criticism of any kind. Sociability refers to the enjoyment of parties and a large number of friends, but also to intolerance towards others, to social isolation among extroverts and a tendency towards solitary activities among introverted subjects. Each of the dimensions has specific manifestations in terms of behavior, the basis in the form of conditioning processes, as well as the physiological, biochemical, neurological and genetic basis (Zuckerman, 1983). According to the DSM-IV, aggressive behavior means any form of behavior committed with the intent to injure a person or object. The main determinant of aggression being behavior that must be intentional, with the primary function of injuring or harming someone or something, either physically or mentally (Schmeelk, Sylvers, & Lilienfeld, 2008). Accordingly, the aim of the research is whether and to what extent personality traits predict the occurrence of aggressive behavior by linking the theoretical models of Zuckerman's alternative five-factor personality model and aggression from the angle of DSM IV.

## Method

### Participants

Groups of 205 subjects, 105 subjects and 100 subjects, aged 14 to 18 years, participated in this study (AS = 16.22; SD = 1.27).

## Procedure

Respondents filled out an online questionnaire that contained all the questionnaires intended for the research. Data collected using instruments: 1). Aggression Scale for Children and Adolescents (SNOP) - Contains 40 items arranged in 4 subscales: Defiance and Opposition, Behavior, Victim and Bully, describing how often the behavior described in the claim occurred in the last 6 months (Penezic, Adoric, Prorokovic, & Junakovic, 2008); 2). Zuckerman-Kulman personality questionnaire (ZKPQ-50-CC) - contains 50 items equally distributed in 5 subscales: Activity, Aggression-Hospitality, Impulsive search for sensations, Neuroticism-Anxiety and Sociability (Mitrović, Čolović, & Smederevac, 2009). The data collected in April, 2021.

## Results and discussion

The results of the regression analysis show that personality traits explain 14.4% ( $R=.379$ ,  $R^2=.144$ ) of the defiance variance ( $F(5,199) = 6,671$ ,  $p<.01$ ), 10.9% ( $R=.330$ ,  $R^2=.109$ ) of the treatment variance ( $F(5,199) = 4,880$ ,  $p<.01$ ) and 11% ( $R=.332$ ,  $R^2=.110$ ) of variance of bully ( $F(5,199) = 4,941$ ,  $p<.01$ ) as aspects of aggressive behavior, and everywhere aggressiveness was singled out as significant predictors and impulsive search for sensations with a negatively correlations of the  $\beta$  coefficient. Also, personality traits explain 9.4% ( $R=.306$ ,  $R^2=.094$ ) of the being a victim variance as an aspect of aggressive behavior ( $F(5,199) = 4,116$ ,  $p<.01$ ), and impulsive search for sensations stood out from the group of predictor variables and sociability.

Table 1. Personality traits as predictors of defiance, treatment, victim and bully.

	$\beta_{def.}$	$\beta_{treat.}$	$\beta_{vict.}$	$\beta_{bul.}$
Activity	.055	.081	.069	.068
Aggressiveness/ hostility	.321*	.224**	.062	.234**
Impulsive search for sensations	-.183*	-.243**	-.206**	-.213**
Neuroticism/ anxiety	.107	-.079	.006	-.094
Sociability	-.082	-.062	-.191**	-.102

The obtained results show that high aggression and low search for sensations lead to aggressive behavior, defiance and violent behavior, while low search for sensations and sociability can lead to putting in the role of a victim in social

situations. People who show a high level of aggression, and a lower tendency to impulsive search for sensations as a personality trait, in behavior show anger, conflict with adults, anger, opposition to the demands of authority, aggressive behavior that causes harm to humans or animals, violation of rules, repeated and permanent victimization peers. Authors Smederevac and Mitrović (2018) came to similar results. The obtained findings indicate the importance of the application of preventive programs in the school context for the modification of certain undesirable types of behavior, as well as in the psychotherapeutic treatment of adolescents. Bearing in mind that personality traits explain only 9.4% to 14.4% of the variance of aggressive behavior, other variables such as family functioning, socioeconomic context in which adolescents grow up, etc. should be included in future research.

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# Preliminary psychometric characteristics of the Short Subtypes of Antisocial Behavior Questionnaire (s-SABQ)

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## Abstract

The aim of this research was to offer and explore psychometric characteristics of the short form of Subtypes of Antisocial Behavior Questionnaire (s-SABQ). Data were collected online, on a convenience sample of 180 adults in Croatia ( $M_{age} = 26.33$ ,  $SD = 6.75$ , 76% female). Apart from items selected from the original SABQ, measures of the Dark Tetrad traits, Honesty-Humility, and COVID-19 protective measures for assessing construct and criterion validity were administered. Confirmatory factor analysis showed excellent model fit for the expected three-factor solution ( $\chi^2(24) = 25.52$ ,  $p = .379$ , CFI = .995, TLI = .992, RMSEA = .019, SRMR = .044). The results of Item Response Theory analysis showed that all items had high discrimination parameters and items from the rule-breaking scale showed the lowest endorsement. Physical and social aggression scales correlated positively with all four Dark Tetrad traits (ranging from .20 to .57,  $p < .01$ ), while all three s-SABQ scales correlated negatively with Honesty-Humility (ranging from -.21 to -.41,  $p < .05$ ) and only rule-breaking scale had a statistically significant negative correlation with COVID-19 protective behaviors ( $r = -.18$ ,  $p < .05$ ). These preliminary results support adequate psychometric properties of the s-SABQ as the brief measure and its use as a screening instrument for antisocial behavior.

**Keywords:** antisocial behavior; psychometric characteristics; Item Response Theory; Dark Tetrad; COVID-19 protective behaviors

## Introduction

Antisocial behaviors represent actions that harm others, violate societal norms, and/or personal or property rights of others (Burt & Donnellan, 2009). There are different forms of antisocial behavior, and Burt & Donnellan (2009) proposed the Subtypes of Antisocial Behavior Questionnaire (SABQ) that captures three major subtypes: physical aggression, social aggression, and rule-breaking. The SABQ is suitable for administration on both community and clinical samples, and is freely available for research purposes. This measure consists of 32 items, and aim of this research was to offer the short form of SABQ (s-SABQ) and to explore its psychometric characteristics; reliability based on internal consistency, item parameters (difficulty and discrimination) and information of the

scales via Item Response Theory (IRT) analysis, and construct and criterion validity.

Given that certain personality traits, such as Honesty-Humility and Dark Tetrad traits (i.e., Machiavellianism, narcissism, psychopathy and sadism) are linked to antisocial behavior (e.g., Allgaier, Zettler, Wagner, Püttmann, & Trautwein, 2015; Chabrol, Bouvet, & Goutaudier, 2017), construct validity was opted to be assessed via relations of s-SABQ with these traits. On the other hand, given that the engagement in antisocial and rule-breaking behaviors has been associated with behaviors specifically relevant to public health risks as well (e.g., Vassallo, Lahaussé, & Edwards, 2016), criterion validity was opted to be assessed via relations of s-SABQ with protective behaviors during the COVID-19 pandemic.

## Method

### Participants

Data were collected online during November and December 2020, on a convenience sample of 180 adults (58% students, 37% employed, and 5% unemployed) in Croatia ( $M_{age} = 26.33$ ,  $SD = 6.75$ , 76% female) within a larger research project. Participants were invited to participate in the research via social media and student's mailing lists.

### Measures

**Short Subtypes of Antisocial Behavior Questionnaire** (s-SABQ) consisted of 3 items with the highest factor loadings in the original study (Burt & Donnellan, 2009) from Physical aggression and Social aggression scales, and 2 items from Rule-breaking scale from the SABQ, while 1 item (concerning drugs) from this scale was modified. Answers are scored with a 5-point Likert scale ranging from 1 = *never* to 5 = *nearly all the time*.

**Dark Triad Dirty Dozen** (DTDD; Jonason & Webster, 2010) with 12 items on a 5-point Likert scale assesses the Dark Triad traits (4 items per trait): Machiavellianism ( $\alpha = .85$ ), psychopathy ( $\alpha = .50$ ) and narcissism ( $\alpha = .70$ ).

**Assessment of Sadistic Personality** (ASP; Plouffe, Saklofske, & Smith, 2017) with 9 items on a 5-point Likert scale measures sadism ( $\alpha = .89$ ).

**Honesty-Humility from HEXACO-60** (Ashton & Lee, 2009) with 10 items on a 5-point Likert scale assesses Honesty-Humility ( $\alpha = .73$ ).

**COVID-19 protective measure** was constructed for the purpose of this research and consists of 5 items assessing COVID protective behaviors ( $\alpha = .75$ ) such as wearing masks, social distancing and washing hands, on a 5-point Likert scale ranging from 1 = *never* to 5 = *nearly all the time*.

## Results

Prior to conducting analyses, since on most of the s-SABQ items the answer 5 was not chosen at all, answers 4 and 5 were merged into one answer.

Since there are theoretical expectations about the structure of the s-SABQ, expected three-factor model was tested via confirmatory factor analysis (maximum likelihood estimator). Results showed excellent model fit:  $\chi^2(24) = 25.52, p = .379, CFI = .995, TLI = .992, RMSEA = .019, SRMR = .044$ ; for factor loadings, see Table 1) and better than one-factor solution ( $\Delta\chi^2(23) = 58.77, p < .05$ ). The Cronbach's alphas of physical aggression and social aggression scales were acceptable considering the length of the scales, while for rule-breaking it was somewhat lower (Table 2).

Table 1: Factor loadings and IRT parameters of s-SABQ items

Scale	Items	Factor loadings	<i>b1</i>	<i>b2</i>	<i>b3</i>	<i>a</i>
PA	Hit others when provoked.	.51	0.35	1.63	2.75	2.15
	Felt like hitting people.	.54	-1.18	0.29	1.84	1.46
	Threatened others.	.49	0.60	1.79	2.73	2.50
SA	Tried to turn others against someone when angry with him/her.	.61	-0.13	1.09	2.37	2.31
	Made fun of someone behind his/her back.	.45	-1.80	0.39	2.25	1.50
	Excluded someone from group activities when angry with him/her.	.51	-0.06	1.25	2.96	1.47
RB	Was suspended, expelled, or fired from school or work.	.33	1.54	2.91	4.04	1.17
	Littered public areas by smashing bottles, tipping trash cans, etc.	.30	1.36	2.30	3.40	2.13
	Used some psychoactive substances (e.g.	.55	0.10	1.07	2.10	2.31

marijuana, ecstasy, amphetamines, cocaine, LSD, etc.).

*Note.* PA = physical aggression, SA = social aggression, RB = rule-breaking, *b* = item difficulty (location), *a* = item discrimination (slope).

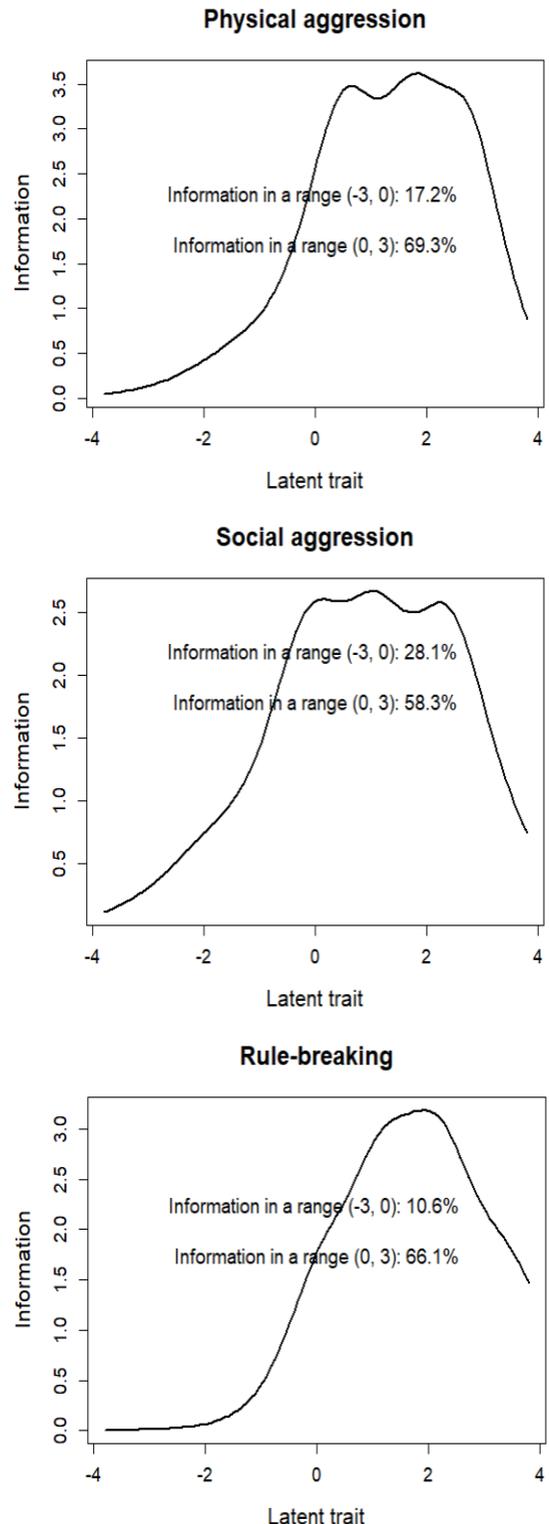


Table 2: Descriptives and Cronbach's alphas of s-SABQ scales

	<i>M</i>	<i>SD</i>	$\alpha$
Physical aggression	1.74	0.62	.68
Social aggression	1.95	0.64	.67
Rule-breaking	1.39	0.51	.58

The results of IRT (graded response model) showed that all items had high discrimination parameters and items from the rule-breaking scale were the most difficult (these items were less endorsed; Table 1). All three scales were more informative or more precise in above-average levels (Figure 1).

Table 3: Intercorrelations of s-SABQ sales and correlations with Dark Tetrad traits, Honesty-Humility and COVID protective behaviors

	Physical aggression n	Social aggression n	Rule-breaking g
Social aggression	.39**	-	-
Rule-breaking	.36**	.30**	-
Machiavellianism	.43**	.40**	.22**
Psychopathy	.25**	.20**	.14
Narcissism	.22**	.36**	.14
Sadism	.57**	.50**	.38**
Honesty-Humility	-.33**	-.41**	-.21**
COVID-19 protective measure	-.14	-.13	-.18*

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

Regarding the construct validity, physical aggression and social aggression scales correlated positively with all four Dark Tetrad traits, and all three s-SABQ scales correlated negatively with Honesty-Humility; however, regarding the criterion validity, only rule-breaking had a statistically significant negative correlation with COVID-19 protective behaviors (Table 3).

## Discussion and Conclusion

The aim of this research was to explore psychometric characteristics of the short form of SABQ. The results showed excellent 3-factor model fit of the short SABQ, and that the reliabilities of the scales are acceptable, given the small number of items (3 items per scale). The IRT analysis showed that all items had high discrimination parameters, and all three scales were more informative in above-

average levels, which could be expected given the content of the scales. Moreover, relations of s-SABQ scales and Honesty-Humility and Dark Tetrad traits were in line with expectations and previous findings (e.g., Allgaier et al., 2015; Chabrol et al., 2017), and indicated that s-SABQ has a good construct validity. Finally, the small, albeit significant correlation of COVID-19 protective behaviors with only rule-breaking scale indicated adequate criterion validity, and is in line with findings of a previous study with the full version of SABQ (O'Connell, Berluti, Rhoads, & Marsh, 2021).

Despite the limitations of this study primarily concerning a small, gender-imbalanced sample, it can be concluded that the preliminary results from the present study support adequate psychometric properties of the s-SABQ and its use as a screening instrument for antisocial behaviors.

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# Mapping the Dark Core of personality within the space of value orientations: Psychometric properties and factor structure of Serbian translation of D-70

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## Abstract

Since the Dark Core construct was recently introduced, we aimed to explore the factor structure and psychometric properties of Serbian translation of the measure (D-70). The sample consisted of 340 participants ( $M_{age} = 30.25$ ,  $SD = 10.94$ , 30% males) who completed the Dark Core measure D-70 and the Portrait Values Questionnaire. Reliability, representativeness and homogeneity were moderate for the majority of the D-70 traits. Exploratory factor analysis of the Dark Core traits yielded a salient one-factor solution. Principal component analysis, conducted on dark traits and value orientation together, yielded a four-factor solution distinguishing the Dark Core factor from the three value orientation factors. Nine out of twelve dark traits loaded on the Dark Core factor with no secondary loadings. However, greed and psychological entitlement cross-loaded on the Dark Core factor and factor that describes focus on individual outcomes (i.e., achievement and power), while narcissism completely loaded on this factor. Greed and psychological entitlement cross-loadings and narcissism loading on the factor that describes focus on individual outcomes implied these dark traits can be seen as less malicious, closely related to status-seeking and reputation motives. The results indicated that the core features of dark personality are located out of value orientations space.

**Keywords:** Dark Core, D-70; Serbian translation; psychometric properties; factor structure

## Introduction

Many attempts in the past years have been made to clarify what lies at the heart of the “darkness”. The majority of previous research on the Dark Triad (Paulhus & Williams, 2002) or the Dark Tetrad traits (Chabrol et al., 2009) provided relatively consistent findings that the dark traits are collapsing into a single “core” factor (e.g. Book, Visser, & Volk, 2015; Book et al., 2016; Jones & Paulhus, 2011; Jones & Figueredo, 2013). Besides, some researchers pointed out that other traits such as status-driven risk taking (Ashton et al., 2010, Visser, Pozzebon, & Reina-Tamayo, 2014), spitefulness and greed (Marcus & Zeigler-Hill, 2015) could also be considered as dark traits. Relying upon the previous findings and assumptions, Moshagen, Hilbig and Zettler (2018) introduced the Dark Core (also called the Dark Factor) as an “umbrella” construct that frames various dark traits and describes one's tendency to ruthlessly pursue own interests, even when that harms others or for the sake of harming others, while having

beliefs that justify those behaviors. Moshagen, Zettler and Hilbig (2020) argue that twelve personality traits (framed by D-70 measure) are specific to antagonistic, malevolent or socially aversive behavior, thereby representing the Dark Core of personality.

Previous findings pointed to substantial relations between dark traits and value orientations. For example, Dark Triad traits are related to self-enhancement (Jonason et al., 2015) while Sadism is related to low Benevolence (Balakrishnan, Plouffe, & Saklofle, 2017). Moreover, amoral tendencies are related to Achievement (Stankov & Knežević, 2005). In sum, previous findings showed that dark traits and values are related, but distinct constructs.

Since the Dark Core was recently introduced, the first aim of the research was to explore the psychometric properties of the Serbian translation of the measure. The second aim was to explore the location of this construct within the space of value orientations, in order to validate previous results on relations between other (similar) dark traits constructs and value orientations, as well as theoretical assumptions regarding Dark Core factor stability and robustness.

## Method

### Sample

The sample consists of 340 participants ( $M_{age} = 30.25$ ,  $SD_{age} = 9.33$ , 30% males). The participants were recruited via snowball method through social media. The study design and data collection were approved by the Institutional Review Board of the Department of Psychology, University of Belgrade, Serbia.

### Instruments

**D-70** (Moshagen et al., 2020) was applied for assessing twelve dark traits (*amoralism-crudelia*, *amoralism-frustralia*, *egoism*, *greed*, *Machiavellianism*, *moral disengagement*, *narcissism*, *psychological entitlement*, *psychopathy*, *sadism*, *self-centeredness* and *spitefulness*) framed by the Dark Factor of personality (Moshagen et al., 2018). The questionnaire consists of 70 items (five to nine per trait) given on a 5-point Likert scale.

Personal and social values were assessed using the **Portrait Values Questionnaire** (Shwartz et al., 2001),

which includes achievement ( $\alpha = .83$ ), power ( $\alpha = .69$ ), security ( $\alpha = .74$ ), conformity ( $\alpha = .69$ ), tradition ( $\alpha = .66$ ), benevolence ( $\alpha = .72$ ), universalism ( $\alpha = .82$ ), self-direction ( $\alpha = .53$ ), stimulation ( $\alpha = .76$ ) and hedonism ( $\alpha = .72$ ). The questionnaire consists of 40 items given on a 6-point Likert scale.

## Results

The descriptive statistics, reliability, representativeness and homogeneity of the D-70 measure are shown in Table 1. With the exception of Machiavellianism and psychological entitlement, which were more pronounced, the average scores on most dark traits were low, as expected for the general population. Low levels of reliability (not exceeding  $\alpha = .70$ ) were obtained for the majority of the traits, which was also expected, given the small number of items per trait. The representativeness and homogeneity were quite adequate for most of the traits. However, the analysis showed that moral disengagement and psychological entitlement are lacking representativeness.

To examine the factor structure of the D-70, we performed two exploratory factor analyses using principal component analysis (PCA) method. In the first case, where only dark traits were included, the analysis yielded a salient one-factor solution (51.12% variance) in line with the assumption of a unique Dark Core of personality underlying all the traits (Appendix A, Table A1). In the second case, where values were included alongside dark traits, four components were extracted ( $KMO = .908$ , Bartlett's test of sphericity  $\chi^2 = 4053.74$ ;  $df = 31$ ;  $p < .001$ ) with eigenvalues  $> 1$ . Horn's parallel analysis supported a four-factor solution. The components, brought to the Direct Oblimin position (Delta = 0) are detailed in Table 2. It could be noted that nine out of twelve dark traits loaded on the belonging component (with no secondary loadings) thus representing the *Dark Factor of personality*.

Table 1: D-70 descriptives, reliability, representativeness and homogeneity

Variables	Min	Max	M	SD	Sk	Ku	$\alpha$	PS1	H1	H5
Amoralism-Crudelia	1.00	4.00	1.68	.59	1.24	1.60	.71	.82	.27	1.00
Amoralism-Frustration	1.00	4.83	2.00	.76	.83	.34	.69	.82	.28	1.00
Egoism	1.00	5.00	2.18	.75	.67	.67	.60	.69	.24	1.00
Greed	1.00	4.50	2.20	.80	.42	-.22	.65	.79	.30	1.00
Machiavellianism	1.00	4.86	2.45	.72	.57	.17	.68	.82	.23	1.00
Moral Disengagement	1.00	4.40	2.13	.67	.56	.11	.48	.51	.16	.69
Narcissism	1.00	4.60	2.15	.69	.72	.63	.49	.62	.18	.68
Psychopathy	1.00	5.00	1.81	.64	1.07	1.72	.69	.82	.24	.78
Psychological Entitlement	1.00	4.60	2.43	.71	.42	-.02	.55	.55	.19	.64
Sadism	1.00	4.63	1.40	.53	2.07	5.65	.78	.90	.32	.77
Self-Centeredness	1.00	4.75	2.02	.76	.80	.89	.64	.70	.31	1.00
Spitefulness	1.00	3.83	1.80	.61	.86	.47	.57	.71	.18	.72
Dark Factor (total score)	1.11	4.20	1.99	.50	.88	1.11	.94	.97	.20	.47

Note. PS1 – Kaiser-Mayer-Olkin measure of representativeness; H1 – average correlation of items; H5 – Knežević-Momirović measure of homogeneity

Table 2: Factor loadings for four-factor exploratory factor analysis and correlations between factors

Variables	Component			
	1	2	3	4
Amoralism-Crudelia	.74			
Amoralism-Frustration	.85			
Egoism	.80			
Greed	.32			.45
Machiavellianism	.69			
Moral disengagement	.79			
Narcissism				.63
Psychopathy	.80			
Psych. entitlement	.39			.40
Sadism	.71			
Self-centeredness	.59			
Spitefulness	.83			
Power				.79
Achievement				.79
Hedonism		.69		
Stimulation		.85		
Self-direction		.72		
Universalism		.43	.41	-.30
Benevolence	-.39	.46	.31	
Conformity			.92	
Tradition			.81	
Security			.81	
Factor correlations				
1		.02	-.30**	.43**
2			.25**	.17**
3				-.16**

Notes. Only loadings  $\geq .30$  are shown; \*\*  $p < .01$

Following Rohan's (2000) suggestion on values classification, we named the second, the third and the fourth component as *focus on opportunity*, *focus on social outcomes*, and *focus on individual outcomes*, respectively.

Although the structure of these three components is not parsimonious due to the presence of certain cross-loadings (i.e., universalism and benevolence), they provide evidence that value orientations are mostly allocated from dark traits. However, the component called *focus on individual outcomes*, primarily saturated by power and achievement, stands out as the most interesting for the topic of this study. Notably, narcissism loaded this component, thus being the only dark trait that “misses” the *Dark Factor*, while greed and psychological entitlement cross-loaded between this component and *focus on individual outcomes*. In addition, greed and psychological entitlement loadings on the *Dark Factor* were the lowest. Further, the analysis revealed that the *Dark Factor* is uncorrelated with *focus on opportunity*, moderately correlated with *focus on social outcomes* (negatively) and with *focus on individual outcomes* (positively).

### Discussion and conclusion

The results showed that the Serbian translation of D-70 is quite a reliable measure of the Dark Factor of personality, in particular a total score. However, certain traits such as moral disengagement or psychological entitlement are facing lower reliability and representativeness. Since these psychometric properties might be affected by the presence of the reverse-keyed items (Menold, 2020) this finding might serve as an input to improve the instrument through the reformulation of items.

Narcissism, greed and psychological entitlement were shown to be closely related to the values of power and achievement, and thus could be seen as less malicious dark features. In other words, these traits were shown to be closely related to status-seeking and reputation motives, and it can be understood that people with these traits are not necessarily aimed at "pursuing their own interests, even if it harms others" (Moshagen et al., 2018). However, our results showed that the core features of dark personality are mapped outside the space of value orientations, which corroborates previous findings (Stankov & Knežević, 2005) on the factorial structure of amoral tendencies and value orientations. With the most salient loadings of amoralism-frustration, spitefulness, psychopathy, egoism and moral disengagement, the *Dark Factor* indeed describes the core features of the dark personality. In contrast to *focus on individual outcomes* factor that subsumes narcissism, greed and psychological entitlement (i.e., traits that could create the tendency to pursue selfish interests in a somewhat acceptable manner), the *Dark Factor* could be seen as more malicious, or in other words as a tendency to pursue own interests even if that harms others. Also, correlations between the *Dark Factor* and three values factors pointed to the conclusion that dark traits and values are related, but distinct constructs, given their low to moderate correlations. Therefore, we can recommend the use of D-70 for the comprehensive assessment of dark traits.

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## Appendix A

Table A1: Factor loadings for D-70

Variables	Loading
Amoralism- Crudelia	.79
Amoralism- Frustration	.77
Egoism	.73
Greed	.64
Machiavellianism	.79
Moral	.70
Disengagement	
Narcissism	.63
Psychopathy	.85
Psych. Entitlement	.64
Sadism	.74
Self-Centeredness	.75
Spitefulness	.81

# Self-Concept Differences Among Offenders, Drug Addicts, Students And Mensa Members

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## Abstract

The aim of the study was to examine the differences in self-concept among four groups: offenders, drug addicts, students and Mensa members in a total sample of 362 participants. To assess self-concept, we used a 100-item Self-evaluative system. One-way MANOVA revealed a significant group membership effect on overall self-concept followed by significant ANOVA differences in all domains. Canonical discriminant analysis, which yielded three significant functions, provided a more detailed insight into self-concept differences among groups. The first function primarily defined by high externality and misanthropy, and low social acceptance, strongly differentiated offenders and addicts from students and Mensa members. The second function primarily saturated by physical strength, rigidity, and externality on the positive pole, with emotionality and moral relativism on the negative pole, differentiated offenders from addicts. The third function which positive pole is highly saturated by intellect, and the negative pole by physical attractiveness and social acceptance, differentiated Mensa members from students. In sum, the Self-evaluative system can be seen as a powerful tool that provides insight into differences among various groups (adaptive and maladaptive), thus explaining the individual differences in worldview and providing a frame for understanding compensation mechanisms.

**Keywords:** Self-concept, Offenders, Addicts, Students, Mensa members

## Introduction

Self-concept is a complex set of perceptions and beliefs about one's own abilities. It is based on the interaction between cognitive evaluations and experiences and has a fundamental role in understanding one's worldview and behavior. Self-concept can be seen as a product of dynamic interaction between person and social environment in which is generated, "survives" changes and is strongly influenced by social feedback (Harter, 1988). A literature review is pointing to the different views of self-concept. For example, self-concept can be seen as physical, psychological and social (Epstein, 1973) or competence, social, family, academic and physical (Bracken, 1992). Despite the different views of self-concept, there is relative consensus that it has hierarchical organization (higher vs. lower order attributes), that lower-order attributes are contributing in general self-concept construction, and that the importance of each lower-order is different from person

to person (e.g., physical strength vs. intellect). In addition, there is also agreement that self-concept serves to maintain a positive image of oneself (Gore & Cross, 2014).

In fact, the role of defence mechanisms is crucial for maintaining a positive image of oneself. As described by Opačić (1995), some of the defence mechanisms are: avoiding persons who can harm one's image about himself, selecting social groups for comparing by similar criteria, and devaluating others (more successful by some criteria) who can provide negative information about own competence which includes the distortion of moral reasoning and externalization (i.e., attributing other's success to ruthlessness and immorality, and own failure to purity and moral consistency). The defence mechanisms are activated and combined in accordance with the situation demands, thus creating the defence system of self-concept ready to compensate for the shortcomings in the field of competencies.

The aim of this research was to provide a more detailed insight into self-concept functioning in offenders, drug addicts, students, and Mensa members, considering their differences in overall adaptivity, lifestyles, and worldviews. The research is a part of the wider study aimed at exploration of self-concept functioning in various populations (athletes, obese, religious, victims of violence, psychiatric patients, cancer patients, etc.).

## Method

### Sample

A sample consisted of 362 participants in total: 100 offenders (aged 20 to 63;  $M = 32.29$ .  $SD = 8.93$ ; all males), 79 drug addicts (aged 19 to 54;  $M = 31.48$ .  $SD = 8.18$ ; 54.4% males), 83 students (aged 20 to 29;  $M = 21.24$ .  $SD = 1.23$ ; 87% females) and 100 Mensa members (aged 19 to 54;  $M = 28.48$ .  $SD = 7.11$ ; 56% males). All subsamples were convenient and participation was completely voluntary and anonymous. The data were collected using paper-pencil survey. The study design and data collection were approved by the Institutional Review Board of the Department of Psychology, University of Belgrade, Serbia.

## Instruments

The self-concept was assessed using a 100-item Self-evaluative system (Opačić, 1995), which includes 5 defence mechanisms based domains: emotionality, rigidity, misanthropy, moral relativism, externality, and 5 evaluative domains: general competence, physical attractiveness, social acceptance, physical strength and intellect. Cronbach alphas ranged from .78 to .88.

## Results

To explore the differences in self-concept among offenders, drug addicts, students and Mensa members, we employed one-way MANOVA. The analysis revealed a group membership effect on overall self-concept ( $F(30, 1025.06) = 2.69, p < .01$ ; Wilks'  $\lambda = .47$ , partial  $\eta^2 = .224$ ), followed by significant ANOVA differences in all domains (Table 1).

Table 1: Self-concept differences among groups

Variables	Offenders		Addicts		Students		Mensa members		F
	M	SD	M	SD	M	SD	M	SD	
Emotionality	3.07	.77	3.43	.51	3.43	.53	2.58	.56	35.00**
Rigidity	3.31	.95	3.06	.59	3.06	.69	2.71	.67	14.21**
Misanthropy	3.24	.85	3.17	.60	3.17	.66	2.54	.71	27.23**
Moral relativism	3.18	.94	3.36	.57	3.36	.69	2.76	.58	13.94**
Externality	3.17	.79	3.05	.56	3.05	.66	2.38	.61	34.02**
General competence	3.49	.86	3.35	.58	3.35	.57	4.15	.74	25.43**
Physical attractiveness	3.40	.71	3.19	.50	3.19	.74	3.12	.73	2.90*
Social acceptance	3.70	.76	3.46	.47	3.46	.55	3.97	.60	12.66**
Physical strength	3.71	.83	3.18	.72	3.18	.83	3.48	.90	9.26**
Intellect	3.75	.66	3.58	.46	3.58	.45	4.04	.59	10.69**

Note.  $df = 3; 358$ , \*\* $p < .01$ , \* $p < .05$

As can be seen, Emotionality, Rigidity, Misanthropy, Moral relativism and Externality were more pronounced in offenders and addicts compared to students and Mensa members. In contrast, General competence was more pronounced in students and Mensa members.

Further, canonical discriminant analysis was used to determine which self-concept domains will discriminate four groups. Three discriminant functions were isolated (Table 2).

The first function ( $R = .64$ , Wilks'  $\lambda = .47$ ,  $\chi^2 = 269.51$ ,  $p < .001$ ), primarily defined by high externality and misanthropy, and low social acceptance, strongly discriminated offenders and addicts from students and Mensa members. In other words, the function showed that students' and Mensa members' self-concept is marked by social acceptance, while offenders' and addicts' self-concept is marked by general distrust and negative attitudes towards others, followed by an external locus of control.

The second function ( $R = .39$ , Wilks'  $\lambda = .79$ ,  $\chi^2 = 82.72$ ,  $p < .001$ ), primarily saturated by physical strength, rigidity and externality on positive pole, with emotionality and moral relativism on negative pole, discriminated offenders from addicts. This function indicated that offenders' self-concept is strongly relied on physical strength, followed by a rigid "black or white" worldview, and external beliefs that most of the things are predetermined. On the other hand, addicts' self-concept is marked by relativization of the moral standards as well as by justification of own behavior by emotional decision making, rather than rational.

The third function ( $R = .26$ , Wilks'  $\lambda = .93$ ,  $\chi^2 = 24.13$ ,  $p < .001$ ), which the positive pole is highly saturated by intellect and emotionality, and the negative pole by physical attractiveness and social acceptance, discriminated Mensa members from students. This function pointed to the subtle differences in self-concept, particularly in the importance of evaluative domains. It is plausible to note that students' self-concept strongly relies on their own appearance and social environment, while Mensa members' self-concept relies on intelligence.

However, the importance of intelligence is followed by emotionality, which may indicate a higher level of vulnerability.

Table 2: Canonical function coefficients and group centroids

Variables	Function		
	1	2	3
Emotionality	.19	<b>-.69</b>	<b>.41</b>
Rigidity	-.01	<b>.46</b>	-.31
Misanthropy	<b>.33</b>	.29	.19
Moral relativism	-.16	<b>-.61</b>	.10
Externality	<b>.53</b>	<b>.36</b>	-.10
General competence	-.15	-.17	.22
Physical attractiveness	.31	-.12	<b>-.62</b>
Social acceptance	<b>-.59</b>	.00	<b>-.53</b>
Physical strength	.27	<b>.57</b>	.31
Intellect	-.28	.15	<b>.88</b>

Groups	Group centroid		
	1	2	3
Offenders	.82	.52	-.08
Addicts	.84	-.62	.16
Students	-.70	-.22	-.41
Mensa members	-.91	.16	.30

Note. Function coefficients above .32 are bolded

## Discussion and conclusion

The results showed that the manner of self-concept functioning provides a powerful distinction between offenders, drug addicts, students and Mensa members.

Our findings suggest that offenders' and addicts' self-concept strongly relies on defence mechanisms that serve as justification for their own failure, whereas offenders attribute their failure to external factors, while addicts attribute it more to their own emotionality. In contrast, students' and Mensa members' self-concept relies on their competence and evaluative domains with subtle differences in the importance of physical attractiveness, social acceptance and intellect. Of course, we find it necessary to outline that the generalization of the findings is limited given the fact that subsamples were insufficiently balanced by gender and age. Despite the limitations, the results are in line with previous findings suggesting that low academic competence and low family acceptance could lead to the development of delinquency (Vermeiren et al., 2004), and that more negative self-concept in addicts is related to lower abstinence motivation (Chen, Zeng, & Chen, 2020). Besides, the results are also in line with findings that positive self-concept may influence academic performance (Choi, 2005) and findings that, even though higher intelligence is related to various positive outcomes, Mensa members might be hypersensitive that could lead to affective disorders (Karpinski et al., 2018).

In conclusion, the Self-evaluative system can be seen as a powerful tool that provides insight into differences in self-concept functioning among various groups (in particular adaptive versus maladaptive), thus explaining individual differences in worldview and providing a frame for understanding compensation mechanisms. Moreover, we can assume that the Self-evaluative system captures the variance of individual differences beyond personality traits. However, such assumption should be examined in future studies.

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# Latent structure and predictors of the ‘common sense’ opinions and beliefs about corporal punishment of children

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## Abstract

Evidence shows that corporal punishment of children (CP) is inefficient and linked with harmful outcomes. However, it is still widely used. To explain such a discrepancy between the evidence and practice, we wanted to study the ‘common sense’ opinions and beliefs that people use to justify or condemn the use of CP. First, we wanted to determine the latent structure underlying the common, colloquial opinions and beliefs that people have regarding the use of CP. Research has shown that support for CP is predicted by the experiences with CP in childhood and the levels of trait aggressiveness. Therefore, we also wanted to establish if the same associations hold true for the ‘common sense’ opinions and beliefs about CP as a criterion. The sample consisted of 1376 participants from the Republic of Srpska. We tested the 33 ‘common sense’ statements about CP, collected from various sources. The CFA suggested that opinions and beliefs about CP have a well-fitting hierarchical latent structure, with three highly correlated first order factors and one second order factor – which represents general support for CP. As expected, both CP in childhood and trait aggressiveness predicted the ‘common sense’ opinions and beliefs about CP. We encourage the further study of this construct as potentially important facet for understanding the parenting practices.

**Keywords:** corporal punishment of children; spanking; opinions and beliefs; aggressiveness; latent structure

## Introduction

Scientific evidence shows that corporal punishment of children (CP) is inefficient and linked with many harmful outcomes (Gershoff & Grogan-Kaylor, 2016), which should, from the factual point of view, be more than enough to conclude that CP should not be used (Gershoff, 2010, 2013). However, for various reasons, many parents still favor the use of CP (Straus et al., 2013). To better understand the thought process behind the decision to use CP it is useful to explore the ‘common sense’, colloquial opinions and beliefs that people use to justify or condemn the use of CP.

The goal of this study is twofold. First, we wanted to determine the latent structure underlying the common, colloquial opinions and beliefs that people have regarding the use of CP. We argue that it is an important step towards understanding how laypeople think about the CP and why many still favor it.

Building upon the ‘intergenerational cycle of violence’ hypothesis (Simons & Wurtele, 2018), research has shown that support for CP is predicted by having experienced CP in childhood and the levels of trait aggressiveness (Kantar et al., 2020). Note that findings reveal that higher CP in childhood predicts higher vengefulness (as a facet of

aggressiveness), which, in turn, predicts higher support for CP (Kantar et al., 2020). Therefore, the second goal of the research was to establish if it is possible to replicate this mediating effect using the ‘common sense’ measures of CP (dis)approval as a criterion.

## Method

### Sample and procedure

The sample consisted of 1376 participants from the Republic of Srpska (age from 18 to 40,  $M = 26.95$ ,  $SD = 6.41$  years; 71% women; 27% currently being parents). Data was collected using an anonymous online survey form. Statistical analyses were done in lavaan 0.6-9 (Rosseel, 2012) and SmartPLS 3.2.8 (Ringle et al., 2015).

### Measures

The frequency of CP in childhood was measured by three self-assessment Likert-type questions referring to how often the participant was punished by mother, father, and compared to other kids from neighborhood.

Aggressiveness was measured by the AVDH questionnaire (Dinić et al., 2014), comprised of four dimensions: anger, vengefulness, dominance, and hostility.

Common sense opinions and beliefs about CP were measured by 33 Likert type statements (see Table 1 for examples). We relied upon a preexisting collection (adapted and expanded from: Subotić, 2017) of around 50 ‘common sense’, colloquial, statements about CP, collected from various sources (social media comments, interviews, discussions, etc.), which we revised to 33 ‘core’ statements used for this study.

## Results

Inferred from previous analyses of the older version of the scale (Subotić, 2017), we tested a hierarchical factor model of opinions and beliefs about CP. The CFA suggested that hierarchical latent structure, with three first order factors and one second order factor, fits the data well ( $CFI = .958$ ,  $TLI = .954$ ,  $RMSEA = .070$ ,  $SRMR = .047$ ) and notably better than a model that presupposes only one CP factor ( $CFI = .921$ ,  $TLI = .915$ ,  $RMSEA = .096$ ,  $SRMR = .064$ ). The higher order factor, i.e., a general support for CP is responsible for about 81% of the items’ variance. First order factors (see Table 1) were named as (summary score means are given in the brackets): 1) Harsh CP ( $M = 1.70$ ,

$SD = 0.65$ ), 2) Rationalizations for CP ( $M = 2.27$ ,  $SD = 0.81$ ), and 3) Rejection of CP ( $M = 3.78$ ,  $SD = 0.75$ ).

Table 1: Factor descriptions.

Factors	Example items
Harsh CP (e.g., use of implements, CP as parents' right, children should fear their parents, boys should be spanked harder than girls); $\Lambda$ range: .66 - .85	<ul style="list-style-type: none"> <li>• CP of children is the most effective disciplinary practice.</li> <li>• I approve the use of "implements" for CP of children (rod, belt, etc.).</li> <li>• If a boy and a girl commit the same offense - the boy should be beaten harder.</li> </ul>
Rationalizations for CP (e.g., necessity and usefulness of CP); $\Lambda$ range: .58 - .86	<ul style="list-style-type: none"> <li>• Corporal punishment is the only or the most effective disciplinary practice when the children are small and when they are not able to understand the possible consequences of their actions.</li> <li>• CP of children is not violence.</li> <li>• When children are aggressive towards others, spanking is the best way to understand what it means to inflict pain on another person.</li> </ul>
Rejection of CP (e.g., futility, ineffectiveness, and harmfulness of CP); $\Lambda$ range: .64 - .72	<ul style="list-style-type: none"> <li>• Everything that can be achieved by CP of children is possible without it.</li> <li>• CP of children is harmful.</li> <li>• CP of children impairs the quality of the parent-child relationship.</li> </ul>

The hierarchical factor model has the same model form, equivalent factor loadings, and item thresholds, i.e., it is 'strongly' invariant (Putnick & Bornstein, 2016) regardless of participants' gender, age, and parental status.

As seen from the PLS structural model shown at Figure 1, both CP in childhood and trait aggressiveness (namely Vengefulness and Dominance facets) significantly predict the 'common sense' opinions and beliefs about CP, explaining 37.2% of the CP second order factor's variance (after adjusting for age, gender, and number of children). CP in childhood also have smaller but significant indirect effects on 'common sense' support for CP, through higher Vengefulness and Dominance.

## Discussion

The latent structure of 'common sense' opinions and beliefs about CP appears to be well defined. There are three facets on the colloquial CP support continuum, which range by 'difficulty' from the arguments rejecting CP due to its ineffectiveness and harmfulness, through sort of rationalized 'reasons' and 'justifications' for using CP (since it is thought to be both necessary and useful), all the way to the support of the harshest CP practices and opinions.

'Common sense' opinions and beliefs about CP show the correlations patterns which are fully consistent with finding from previous research, e.g., by Kantar and colleagues (2021), which used a simpler, 'bare boned' measure of the CP support. Specifically, 'common sense' scores are well predicted by both the levels of previously experienced CP in childhood and some aspects of dispositional aggressiveness. Note that CP in childhood strongly predicts support for CP directly, but also indirectly to a lesser extent, i.e., we replicated the small mediating effect (Kantar et al., 2021) by which higher CP in childhood predicts higher Vengefulness, which, in turn, predicts higher support for CP. Furthermore, the equivalent mediating effect was also observed for the Dominance trait. In other words, consistent with the 'intergenerational cycle of violence' hypothesis (Simons & Wurtele, 2018) and previously established findings (Kantar et al., 2020), 'common sense' opinions and beliefs about CP could be formed by being exposed to CP in childhood, which then, to an extent, can increase aggressive traits, resulting in individuals having more favorable opinions and rationalizations regarding the reasons why CP should be used.

In conclusion, the latent structure of 'common sense' opinions and beliefs about CP is well defined and meaningfully predicted by other variables, in line with other findings, thus we encourage the further study of this construct as potentially important facet for understanding the parenting practices.

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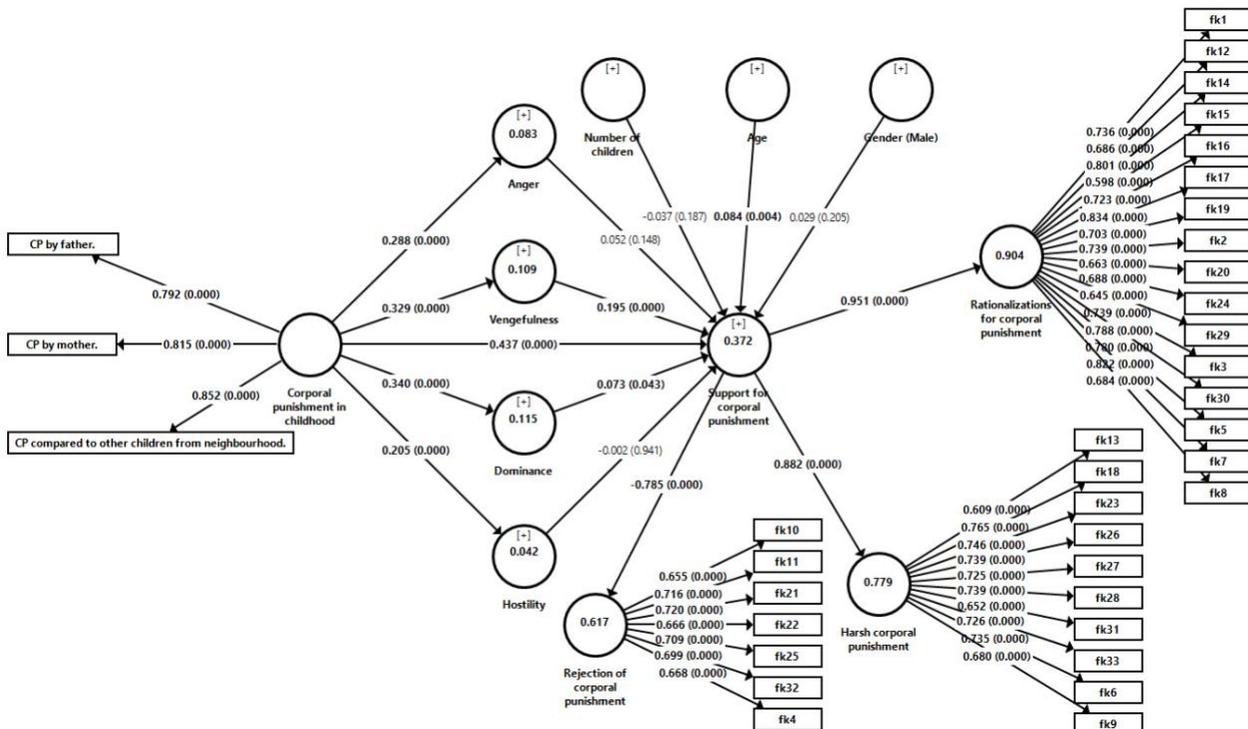


Figure 1: Structural PLS model predicting “common sense” support for corporal punishment.  $\beta$ s are shown in front of the brackets,  $p$ s are given in the brackets (obtained via bootstrap with  $k=5000$  random matrices). Values in circles are  $R^2$ s. Significant direct paths are bolded. Significant indirect effects are: Corporal punishment in childhood  $\rightarrow$  Vengefulness  $\rightarrow$  Support for corporal punishment:  $\beta=0.064$ ,  $p<.001$ ; Corporal punishment in childhood  $\rightarrow$  Dominance  $\rightarrow$  Support for corporal punishment:  $\beta=0.025$ ,  $p=.048$ .

# Empathy of the devil: Sex differences in the Dark Tetrad and empathy

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## Abstract

The aim of this research was to examine the mediating role of different types of empathy in explaining sex differences in the Dark Tetrad traits. Data were collected online, on a convenience sample of 144 students (age:  $M = 22.18$ ,  $SD = 2.26$ , 43% male). The Dark Tetrad was measured using Short Dark Triad and The Assessment of Sadistic Personality, while empathy was measured using Affective and Cognitive Measure of Empathy assessing cognitive empathy, affective resonance and affective dissonance. Mediation was examined using single model path analysis, where all four dark traits were simultaneously treated as outcome variables, and all three types of empathy as mediators in the relationship between sex and the dark traits. Sex and three types of empathy explained 10.8% of narcissism variance, 26.4% of Machiavellianism variance, 42.0% of psychopathy variance, and 70.6% of sadism variance. Affective dissonance was significant mediator of sex differences in Machiavellianism, as well as in sadism. Sex differences in psychopathy were mediated by both affective resonance and dissonance. These results further clarify sex differences in Dark Tetrad traits in terms of sex differences in empathy, highlighting specificities of each of these traits which are discussed.

**Keywords:** Dark Tetrad; empathy; sex differences

## Introduction

Almost twenty years ago, Paulhus and Williams (2002) described the Dark Triad of personality which is consisted of three socially aversive traits that still fall in normal or “everyday” range: Machiavellianism, narcissism, and psychopathy. More recently, everyday sadism was considered as a trait that can be added to this constellation, so together they are forming the Dark Tetrad. One of the key features of the Dark Tetrad traits is callousness or low empathy (Paulhus, 2014).

Empathy, in the most general sense, refers to the ability to understand, share and adequately respond to the affective experiences of others. There are gender differences in empathy, with women scoring higher (e.g., Christov-Moore et al., 2014), as well as in dark traits, with men scoring higher (e.g., Muris, Merckelbach, Otgaar, & Meijer, 2017; Neumann, Jones, & Paulhus, 2021). It has also been shown that empathy mediates some of the sex differences in the

Dark Triad traits (e.g., Jonason, Lyons, Bethell, & Ross, 2013).

However, neuropsychological research points out that there are two types of empathy: cognitive empathy, referring to the ability to recognize and understand the emotions of others, and emotional or affective empathy, referring to the ability to adequately respond to the emotions of others (Shamay-Tsoory, Aharon-Peretz, & Perry, 2009). Previous research indicates that there are differences in the relations of two types of empathy with each of the dark traits, where the inverse relations of all of the Dark Tetrad traits to emotional empathy are more consistent than the relations to cognitive empathy (e.g., Pajevic, Vukosavljevic-Gvozden, Stevanovic, & Neumann, 2018; Turner, Foster, & Webster, 2019). Moreover, it has been shown that different types of empathy had different mediational role in explanation of sex differences in dark traits (e.g., Jonason & Krause, 2013; Jonason & Kroll, 2015).

The aim of this research was to further examine the mediating role of different types of empathy in explaining sex differences in the Dark Tetrad traits. Given that sex differences are larger in affective empathy (Christov-Moore et al., 2014), and that dark traits are more associated with this type of empathy (Pajevic et al., 2018; Turner et al., 2019), a relatively novel measure of empathy was used, that covers the broader range of affective empathy compared to previous measures (Vachon & Lynam, 2016).

## Method

### Participants

Data were collected online as a part of a larger research project, on a convenience sample of 144 students (age:  $M = 22.18$ ,  $SD = 2.26$ , 43% male).

### Measures

Both the Dark Tetrad traits and empathy were assessed on a 5-point Likert scale (1 = *completely disagree*, 5 = *completely agree*).

The Dark Tetrad was measured using *Short Dark Triad* (Jones & Paulhus, 2014) assessing Machiavellianism ( $\alpha = .80$ ), narcissism ( $\alpha = .66$ ) and psychopathy ( $\alpha = .71$ ), and

**Assessment of Sadistic Personality** (Plouffe, Saklofske, & Smith, 2017;  $\alpha = .85$ ).

Empathy was measured using a relatively novel measure – **Affective and Cognitive Measure of Empathy** (Vachon & Lynam, 2016) assessing cognitive empathy ( $\alpha = .89$ ), affective resonance (i.e., compassion;  $\alpha = .84$ ) and affective dissonance (i.e., the experience of a contradictory emotional responses – e.g., feeling annoyed with others’ happiness;  $\alpha = .86$ ) which is reverse scored so that higher scores on all three scales indicate greater empathy.

## Results

Bivariate relationships between examined variables are shown in Table 1. Males had significantly lower affective empathy - both resonance and dissonance, and higher levels of Machiavellianism, psychopathy, and sadism. There were no gender differences in cognitive empathy nor narcissism. Affective resonance was significantly positively associated with affective dissonance and cognitive empathy, and all four Dark Tetrad traits were positively intercorrelated.

In order to account for the shared variance between the different types of empathy, mediation was examined using

single model path analysis, where all four dark traits were simultaneously treated as outcome variables, and all three types of empathy as mediators in the relationship between sex and the dark traits. Intercorrelations between three types of empathy were included in the model, as well as intercorrelations between the dark traits. Sex was treated as dummy variable in the model, and standard procedures for testing mediation were used, since they are appropriate when predictor is dichotomous, and mediator and criteria are continuous (e.g., Iacobucci, 2012). Path model is shown for each dark trait separately to increase clarity (Figure 1).

Sex and empathy explained the highest proportion of sadism variance and the lowest of narcissism variance. Affective dissonance was a significant mediator of sex differences in Machiavellianism ( $b = 0.23, z = 3.21, p = .001$ ), as well as in sadism ( $b = 0.34, z = 3.95, p < .001$ ). Sex differences in psychopathy were mediated by both affective resonance ( $b = 0.11, z = 2.52, p = .012$ ), and dissonance ( $b = 0.16, z = 2.70, p = .007$ ). None of the sex differences in dark traits remained significant when empathy was considered, indicating complete mediation.

Table 1: Intercorrelations between sex, empathy, and the dark traits

	1	2	3	4	5	6	7
1. Male sex	-						
2. Cognitive empathy	-.07	-					
3. Affective resonance	-.27**	.29**	-				
4. Affective dissonance	-.36**	.12	.68**	-			
5. Machiavellianism	.19*	-.08	-.37**	-.51**	-		
6. Narcissism	.07	.28**	.01	-.13	.28**	-	
7. Psychopathy	.21*	-.07	-.58**	-.60**	.56**	.21*	-
8. Sadism	.32**	-.16	-.67**	-.83**	.53**	.21*	.64**

Note. Dummy variable was used for sex of participants, with females as a reference group.

\*  $p < .05$ . \*\*  $p < .01$ .

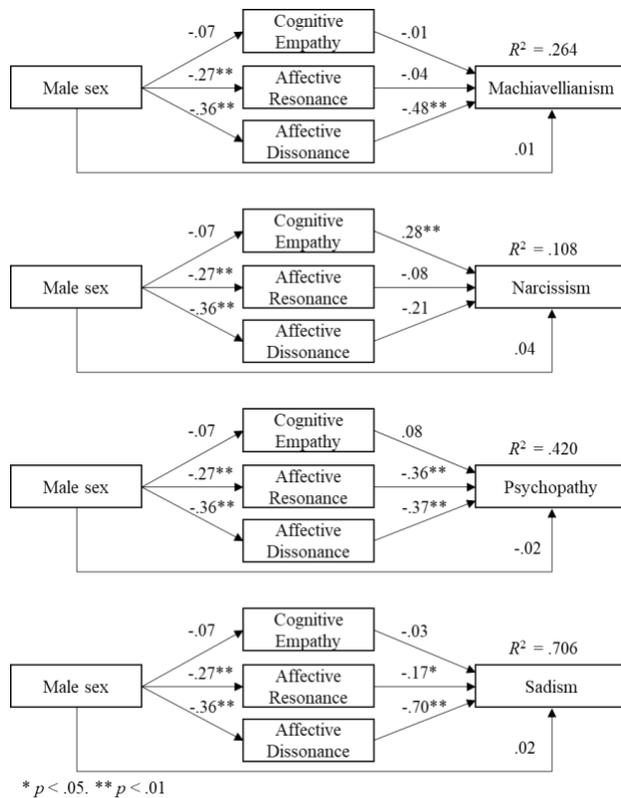


Figure 1: Standardized coefficients of path model of prediction of dark traits based on sex and empathy. Dummy variable was used for sex of participants, with females as a reference group.

## Discussion

In this study we opted to further examine the mediating role of different types of empathy in explaining sex differences in the Dark Tetrad traits using a relatively novel measure of empathy that distinguishes between cognitive empathy and two different forms of affective empathy. In accordance with previous findings, cognitive empathy was not related to sex, while females had higher scores on both forms of affective empathy (see Christov-Moore et al., 2014). Moreover, sex differences in all dark traits except narcissism were found (see Jonason & Kroll, 2015). Regarding the relations of the dark traits with empathy, narcissism was positively associated with cognitive empathy, while the other dark traits were primarily associated with lack of affective empathy, in line with the notion of narcissism as the “brighter” trait (e.g., Rauthmann & Kolar, 2012).

Gender differences in Machiavellianism, psychopathy, and sadism can be explained by men being more prone to experience contradictory emotional responses (i.e., affective dissonance), and gender differences in psychopathy can additionally be

explained by men being less prone to compassion (i.e., affective resonance). Results concerning mediational role of empathy in explaining sex differences in dark traits are in accordance with previous findings (Jonason et al., 2013; Jonason & Krause, 2013; Jonason & Kroll, 2015). They also point to a conclusion that deficits in affective empathy are the core of those differences, especially when it comes to psychopathy.

Since results of this study were obtained on relatively small sample, further research using larger samples is needed. Different measures of empathy, for example behavioral, could also be used. Moreover, a high overlap between sadism and emotional dissonance obtained in this research points to the possibility of considering this form of empathy as an aspect of sadism (see Međedović, 2017), and future research should investigate this as well on a more heterogeneous sample. Nevertheless, the results of this study further clarify sex differences in Dark Tetrad traits in terms of sex differences in empathy, highlighting specificities of each of these traits.

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*PSYCHOLOGY OF EDUCATION*

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# Education during the Covid-19 lockdown – Experiences of Roma students from substandard settlements in Belgrade

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## Abstract

The Covid-19 pandemic shifted school classes from classrooms to the various online platforms. This situation impacted the education of all students, and students living in substandard conditions were particularly affected. We asked 119 Roma students (50.4% males), aged between 12 and 19 years ( $M = 14.88$ ;  $SD = 1.69$ ), from substandard settlements in Belgrade (four 5-point Likert-scale questions) about their teaching experiences during the lockdown. The results showed that 83.3% of participants disagree with the statement: "I was technically well prepared to follow the online classes." Only 24.4% of respondents claim that teachers contacted them regularly regarding distance learning. Similarly, only 29% of them claim that their school was well organized during the epidemiological measures. In the end, the average response to the question "I think I lost a lot when it comes to learning because of the epidemic" was  $M = 3.25$  ( $SD = 0.84$ ). These results indicated that the situation caused by the Covid-19 pandemic significantly impacted the educational process among Roma students who live in substandard settlements in Belgrade. Apparently, poor living conditions, combined with poor teaching organization and inadequate technical equipment, significantly disrupted the learning process of these students during the lockdown.

**Keywords:** Covid-19 pandemic, education, Roma students, substandard settlements, teaching experiences

## Introduction

The global pandemic of the Covid-19 virus has brought the entire world into a state of emergency. Faced with an unknown virus, which spreads extremely fast and can be fatal, the authorities in almost all countries in the world introduced strict measures to restrict contact between people, i.e. to slow down the spread of the virus.

Although adolescents (11 to 19 years old) are less likely to be infected with the Covid-19 virus and usually have milder symptoms (WHO, 2020), young persons are highly exposed to deprivation of the educational process and disruption of social life.

Italian teenagers were mostly concerned about their school and work habits and achievements, mental and physical

health, as well as relationships with family and friends (Scott et al., 2021). In the context of education, their reports often contained "complaints" about too much homework, lack of motivation to study and poor organization of the educational process (Scott et al., 2021).

Teenagers in Poland stated that the demands of teachers were too high and complained about the lack of consultative work, and inadequate conditions for distance learning; teenagers in rural areas were particularly exposed to such problems (Korzycka et al., 2021).

Also, some findings (López-Bueno, 2020) indicate that teenagers were more prone to passive behavior, characterized with a lack of physical activity and more screen time. Their general quality of life declined, with intensified mental health issues and school anxiety (Ravens-Sieberer et al., 2021).

School and university students from Serbia were dissatisfied because they were losing their learning routine, missing important events (e.g. prom night) and could not socialize with peers in the school context (Vuletić et al., 2021).

UNICEF (2021) data show that the adverse effects of the Covid-19 pandemic are most present among children who belong to vulnerable and marginalized groups, such as Roma people, refugees, children living in poverty, etc. There were also findings (de Figueiredo et al., 2021; Larkins et al., 2020; Ravens-Sieberer et al., 2021) indicating that teenagers with lower socio-economic status and lack of living space (e.g. refugees) were particularly affected by the Covid-19 situation.

The Roma population in Europe faces serious problems such as lack of the opportunities for educational and professional development, poverty and discrimination (Chireac & Arbona, 2016; Klaus & Marsh, 2014; McGarry, 2014; Milkova & Larkins, 2020). The Covid-19 pandemic additionally worsened their situation, due to the fact that children without technical means did not have access to online classes. Additionally, they were separated from peers from the general population. Studies conducted in European Union (Berta, 2020; Korunovska & Jovanović, 2020; Porras et al., 2020) found that lack of access to online classes during the lockdown increased the risk of dropouts among Roma

children significantly. It was also showed that the biggest barriers for Roma children are: lack of electricity and internet, technological devices, and school equipment, as well as insufficiently developed digital literacy to follow online classes (Berta, 2020; Korunovska & Jovanović, 2020; Porras et al., 2020).

During the lockdown, children in Serbia could follow part of the school lessons on TV, and some of them also received printed school materials (Vuković et al., 2021; Vuletić et al., 2021). However, significant amount of school classes was organized online (Vuković et al., 2021; Vuletić et al., 2021), and that was the problem for children without technical means for attending online classes.

Having in mind that ADRA - the Adventist Relief and Development Agency is working on education, medical and psychosocial support to Roma people in substandard settlements in Belgrade and that we are currently conducting a comprehensive study about the education of Roma children from these settlements, we decided to get initial insights into their experiences with education during the Covid-19 lockdown.

## Method

### Instrument

The respondents were asked to give answers on a Likert scale from 1 (Strongly disagree) to 5 (Strongly agree). The questionnaire consists of the following questions:

Q1: "When it comes to teaching, my school was well organized during the epidemiological measures."

Q2: "Teachers contacted us regularly during the lockdown /curfew regarding distance learning."

Q3: "I was technically well prepared to follow the online classes."

Q4: "I think I lost a lot when it comes to learning because of the epidemic."

### Participants

The research sample was composed of 119 students (50.4% males) aged between 12 and 19 years ( $M = 14.88$  years,  $SD = 1.69$ ) from 5 substandard settlements in Belgrade (Serbia). Out of this number 68.9% are regular elementary school students, and 37.1% are tertiary-type (who did not start elementary school at the "regular" age, and are now studying expedited education) elementary school students.

### Procedure

The respondents were individually questioned. Interviewers told the respondents that their answers were anonymous. They then read questions from the paper sheet and recorded their answers. Interviewers posed questions in Serbian, and while asking the question, checked whether respondents understood what the question meant. Data collection was performed in May 2020.

## Results

Table 1: Respondents' responses to asked questions

	1	2	3	4	5	Average
1Q		57.1%	13.4%	29.4%		2.72
		(68)	(16)	(35)		(0,89)
2Q		56.3%	19.3%	24.4%		2.68
		(67)	(23)	(29)		(0,84)
3Q	21%	72.3%	6.7%			1.86
	(25)	(86)	(8)			(0,51)
4Q	0.8%	18.5%	39.5%	37%	4.2%	3.25
	(1)	(22)	(47)	(44)	(5)	(0,84)

1- Strongly disagree; 2- Disagree; 3- Not sure; 4- Agree; 5- Strongly agree

Non-repeated measures ANOVA showed that gender and type of school did not affect the responses significantly.

## Discussion

The answers to Q3 show that over 90% of Roma children from substandard settlements in Belgrade state that they did not have the technical equipment to attend online classes. It is indicative that not a single respondent stated the opposite - that he or she was technically well prepared to attend classes. The children from these settlements do not have computers, tablets, or smartphones, and they could not be engaged in distance learning, as already found (de Figueiredo et al., 2021; Larkins, 2020; Ravens-Sieberer et al., 2021, UNICEF, 2021) for children from vulnerable groups. In this case, we could say that the assistance at the governmental level was absent. Although the state obliges that children from such social groups regularly enroll the primary school and keeps records of their schooling (Babović, 2021), it seems that children from substandard settlements were "forgotten" during the Covid-19 lockdown. It was previously found (Korunovska & Jovanović, 2020) that inability to follow online classes increases the risk of dropout, and we do not have data on whether this was also the case with our respondents.

Apart from the macro level, the authorities' lack of help and understanding is also visible at the micro level. More than half of respondents from substandard settlements in Belgrade state that their teachers did not contact them regularly (Q2) and that their school was not well organized during the epidemiological measures (Q1). These answers indicate that position of these children was further aggravated by the fact that their teachers in most cases were not sufficiently involved in the mitigation of the consequences of the situation that significantly deprived the educational process of these children. Obtained results are in line with previous findings suggesting that the Covid-19 pandemic additionally worsened life situation and educational processes of Roma children in Europe (Berta, 2020; Korunovska & Jovanović, 2020; Porras et al., 2020).

About 40% of respondents think that they lost a lot in education due to the pandemic and similar percentage of them gave the response "Not sure." Probably, the majority of these (3 - "Not sure") answers were from respondents who could not assess the extent of the negative consequences to their education because of the Covid-19 preventive measures. These results indicate that a large number of respondents believe that the quality of their education was disrupted due to the Covid-19 situation.

Although we asked only four questions and did not have a reference group from the general population to compare with, the answers obtained from Roma children from substandard settlements in Belgrade indicate that the schooling of these children was particularly aggravated in the situation caused by the Covid-19 pandemic.

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# Parenting Styles And Life Stressors As Predictors Of Cyber-Aggression And Cyber-Victimization Among High School Students

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## Abstract

Risk factors for cyberbullying include parenting styles and stressful childhood life events. The aim of this study was to examine the relationships between parenting styles and life stressors with cyberbullying on a sample of 261 B&H high school students. The prevalence of cyber-aggression and cyber-victimization in the past two months was low, suggesting less than one event on average. The best supported predictive model of cyber-aggression included predictors: lower mother's authoritative parenting, being constantly misunderstood by teachers, and parents having constant conflicts. The best supported predictive model of cyber-victimization included predictors: being constantly misunderstood by teachers and peers, being a victim of other types of violence, and spending extended periods of time in hospitals. Results suggest that a lack of adult support, reflected by both parenting styles and life stressors, modestly predict a higher likelihood of cyber-aggression. Conversely, parenting styles are not needed for the explanation of cyber-victimization, as life stressors alone are moderately reliable predictors of this phenomenon. There is a notable overlap between cyber-aggression and cyber-victimization – and being constantly misunderstood by teachers is a predictor of both. This highlights a possible critical role that teachers could play in the prevention of cyberbullying.

**Keywords:** cyberbullying, cyber aggression, cyber victimization, parenting styles, student life stressors

## Introduction

Cyberbullying, which refers to intentional aggression perpetrated using electronic devices, is becoming an increasingly common problem among youth (Herrera-López et al., 2017; Katz et al., 2019; Li, 2007; Zych et al., 2016). Cyberbullying has two dimensions: cyber-aggression and cyber-victimization, with the former receiving much more research attention (Del Rey et al., 2015).

Previous research has identified some risk factors for cyberbullying, including parenting styles and some adverse/stressful life events. Specifically, findings indicate that parental warmth is robustly associated with lower cyberbullying, be it cyber-aggression or cyber-victimization (Elsaesser et al., 2017). In terms of specific parenting styles, authoritarian parenting, which is defined by low parental warmth and high control (Zečević & Subotić, 2021), is most often found to be a determinant of cyberbullying, especially cyber-victimization (Martínez et al., 2019; Moreno-Ruiz et al., 2019). Research has also identified a positive link between exposure to stressful life events and cyber-aggression (Geng & Lei, 2021), with adolescents low in self-compassion being more likely to build fatalistic beliefs and engage in cyber-aggression when they were exposed to high levels of stressful life events (Geng & Lei, 2021). Similarly, the effects were found for specific adverse/stressful experiences, e.g., childhood emotional abuse, which was positively related with cyber-aggression (Kircaburun et al., 2019).

Note, however, that current research on risk factors for cyberbullying is limited, as there is a lack of findings regarding concurrent predictive value of both parenting styles and life stressors. Furthermore, research focusing on life stressors typically did not consider an extensive array of individual stressors, e.g., school or peer related problems. Thus, the aim of this study was to examine the concurrent value of parenting styles and an extensive collection of life stressors in predicting cyber aggression and cyber victimization on a sample of high school students.

## Method

### Sample and procedure

The sample comprised 261 high school students from B&H (age:  $M=16.44$ ,  $SD=1.03$  years; 83% girls), surveyed using an anonymous online survey.

### Measures

Parenting styles were measured by the short version of Parenting Styles and Dimensions Questionnaire (PSDQ; Robinson et al., 2001), revised for this research. It measures Authoritative, Authoritarian, and Permissive parenting styles. We obtained these measures separately for mothers and fathers, as judged by their children, i.e., high school students, on a scale from 1='not correct' to 5='fully correct'.

Life stressors were measured by the list (LS) of 28 stressors suggested by Subotić&RadetićLovrić (2019), which comprise various family, school, peer, and health related stressors. Each stressor is answered on a dichotomous scale (it happened – it did not happen).

Cyberbullying was measured by European Cyberbullying Intervention Project Questionnaire (ECIPQ; Del Rey et al., 2015), revised and adapted for this research. ECIPQ measures both cyber-aggression and cyber-victimization during the previous two months. The scale ranges from 1='never happened' to 5='happened several times per week'.

### Statistical analyses

Analyses were done in JASP (JASP Team, 2020). When assessing the statistical significance of bivariate effects, we used the Bayes factor  $-BF_{10}$ , which denotes the odds of  $H_A$  relative to  $H_0$ . According to tentative convention,  $BF_{10}>3$  suggest substantial evidence for the effect,  $BF_{10}>10$  suggest strong evidence,  $BF_{10}>30$  very strong evidence, with  $BF_{10}>100$  suggesting decisive support for the effect (Lakić, 2019; Wetzels&Wagenmakers, 2012).

For multivariate effects, i.e., multiple linear regression, we first relied upon  $BF_M$  to decide which specific predictors have the highest increase of odds after observing the data (Faulkenberry, 2020). Then we relied upon the  $BF_{inc}$  to assess the odds of chosen individual predictors after observing the data (Faulkenberry, 2020).

## Results

The prevalence of cyber-aggression ( $M=1.12$ ,  $SD=0.14$ ) and cyber-victimization ( $M=1.32$ ,  $SD=0.32$ ) in prior two months was low, with less than one cyberbullying event on average, and no significant gender differences. There was a substantial correlation between victimization and aggression experiences:  $r=.41$ ,  $BF_{10}>100$ .

The best supported Bayesian predictive model of cyber-aggression ( $BF_M=271.71$ ) explained 11.9% of variance and included (see Table 1) one parenting style predictor (lower mother's authoritative parenting) and two stressor

predictors (being constantly misunderstood by teachers, and parents having constant conflicts).

Table 1: Bayesian linear regression predicting cyber-aggression.

Predictors	$BF_{inc}$	$\beta$
Mother's authoritative parenting	7.87	-.17
LS: Being constantly misunderstood by teachers	17.78	.18
LS: Parents having constant conflicts	5.57	.17

Notes: Only predictors from the model with the highest posterior odds are shown.  $BF_{inc}$ =inclusion Bayes factor.  $\beta$ =regression correlation.

The best supported Bayesian predictive model of cyber-victimization ( $BF_M=961.66$ ) explained 20.3% of variance and comprised four life stressors as notable (and positive) predictors, with no contribution of parenting styles (see Table 2).

Table 2: Bayesian linear regression predicting cyber-victimization.

Predictors	$BF_{inc}$	$\beta$
LS: Being constantly misunderstood by teachers	41.24	.18
LS: Being constantly misunderstood by peers	376.40	.24
LS: Being a victim of (some other) types of violence	3.73	.13
LS: Spending extended periods of time in hospitals	5.51	.14

Notes: Only predictors from the model with the highest posterior odds are shown.  $BF_{inc}$ =inclusion Bayes factor.  $\beta$ =regression correlation.

## Discussion

Our results suggest that a lack of adult support, reflected by a combination of parenting styles and particular life stressors (namely poor relationship with teachers and being exposed to parental conflicts), modestly predict a higher likelihood of cyber-aggression acts. Conversely, parenting styles are not needed for an explanation of cyber-victimization, as several specific life stressors alone (poor teacher and peer relationships and unsafe/violent life context) are moderately reliable predictors of this phenomenon. In other words, while overall not strong predictors, some life stressors are better determinants of cyberbullying than parenting styles, making the latter fully redundant in comparison, when explaining cyber-victimization. Note, however, that previous research shows that life stressors themselves can be viewed as conditional predictors of cyberbullying, as their effects tend to be mediated or moderated by other variables (Geng&Lei, 2021; Kircaburun et al., 2019), which likely points out to

a very complex scenario and a set of circumstances that eventually leads to instances of cyberbullying. Life stressors and to a lesser extent parenting styles are arguably only small parts of that conditional predictive network.

Surprisingly, we failed to replicate a contributing effect of authoritarian parenting on a higher probability of cyberbullying (Martínez et al., 2019; Moreno–Ruiz et al., 2019). Rather, we obtained a protective effect of higher authoritative parenting (of a mother). While it was not possible to test this assumption on a current dataset, due to too low life stressors' frequencies, future research should explore a possible mitigating effect of authoritative parenting on a relationship between life stressors and cyberbullying. Also, due to mostly female sample, we were unable to test gender specific predictive patterns.

Finally, it is important to point out that there is a notable overlap between cyber-aggression and cyber-victimization – with a life stressor denoting frequent misunderstanding by teachers being a predictor of both. This highlights a possible critical role that teachers could play in the prevention of cyberbullying, which is currently an underlooked factor in cyberbullying research.

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# GPA, Personality, And Attitudes Towards Science As Predictors Of The High School Students' Mathematical Literacy

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## Abstract

Reputable international studies (i.e., PISA and TIMSS) show that B&H students trail behind their peers regarding mathematical literacy (ML) achievement. However, factors contributing to such poor achievement have not been properly explored. To better understand this conundrum, we examined how GPA, personality, and attitudes towards science (ATS) predict ML. The sample comprised 114 conveniently selected high school students (59% females) from the Republic of Srpska (B&H). The results show that the average ML achievement score was modest, with only 51% success rate. Among the examined variables, ATS dimension 'Antipathy Towards Science and Scientists – AS' and GPA emerged as the most important predictors of ML (explaining 29.5% of its variance). This means that having better school grades will coincide with better functional math skills up to a point. However,

simultaneously it is also important for students not to have negative views of the science, as having them represents an obstacle towards them being able to recognize the value of math in real-world scenarios and to use it effectively. This adds to the body of evidence suggesting that changing the attitudes towards science might potentially play a major role in improving math & science literacy among the B&H students.

**Keywords:** mathematical literacy, attitudes towards science, grade point average (GPA), Big Five personality traits, high school

## Introduction

Reputable international assessments have shown that B&H students trail behind the students from other countries regarding many relevant educational outcomes, including 'mathematical literacy' (ML). For example, PISA (Džumhur,

2019a) testing has shown that B&H students' mathematical literacy scores are behind their peers from OECD countries for roughly three school years. Similarly, results put B&H students below the average on the TIMSS scale (Džumhur, 2019b). However, factors contributing to such poor achievement have not been properly explored. This underachievement issue can be studied on several levels – school system, curriculum, instructional quality, etc.

Here, we opted to study this issue from an individual differences point of view, i.e., to focus on the contribution of several variables measured at the student level. Specifically, we examined how GPA, personality, and attitudes towards science (ATS) predict ML.

The predictors were selected due to their well-established associations with various academic outcomes variables (e.g., Hazen & Trefl, 2009; Hong & Lin, 2011; Impey et al., 2011; Osborne et al., 2003; Subotić et al., 2020). We were especially interested in the contribution of ATS, given that previous research has demonstrated that ATS are the most robust correlates of scientific misconceptions and myths among B&H (albeit university) students, even after adjusting for the intelligence, personality, and GPA. Since both ML and scientific misconceptions can be viewed as a part of more general scientific literacy, we expected that ATS might play an important role in understanding ML levels as well.

## Method

The sample comprised 114 conveniently selected high school students (59% females) from the Republic of Srpska (B&H). Data was gathered using an online survey form.

Following variables were measured:

- Students' previous year GPA;
- Big Five personality traits (BFI-S; Lang et al., 2011; see also: John et al., 2008);
- Three ATS dimensions, as measured by the ATS scale (Subotić et al., 2020):
  - 1) Antipathy Towards Science and Scientists (AS; 8 items, e.g.: "Scientific facts are given more credit than they deserve.";  $\omega=.82$ ),
  - 2) Importance and Affinity Towards Science (IS; 7 items, e.g.: "Science makes our lives better and easier.";  $\omega=.81$ ),
  - 3) Deficiency of Science (DS; 6 items, e.g.: "Science can't answer the majority of life's most important questions.";  $\omega=.69$ ).
- ML – operationalized by 11 PISA-inspired math literacy tasks (chosen from a starting pool of over 30 tasks constructed for this research) which require the use of math to solve 'real life' problems, e.g., choosing the best deal when purchasing a cell phone or a digital book storage, or deciding the most efficient driving path to a destination. Researchers graded each of the students' answer on 0-3 points scale, for a maximum score of 33 points. An example of ML task:

*You are faced with the dilemma of whether to order books in printed or digital format for the next school year. The price of all the books you need in the printed version is 121 BAM, while online books cost 36 €. However, your Google Drive storage capacity is already full. If you opt for this variant, you will need to expand this capacity so that you can store all the necessary literature. One of the basic packages offered by Google Drive for upgrading memory space is 200 GB, and its price is 29.99 USD per year.*

*The current exchange rate list is:*

*1 € = 1.95 BAM*

*1 USD = 1.61 BAM*

*Of the two options offered, which is cheaper? Explain your answer and show the calculations / procedure on which you base it!*

Statistical significance of the bivariate effects was assessed using the Bayes factor –  $BF_{10}$ , implemented in JASP software (JASP Team, 2020), which represents the  $H_A:H_0$  odds. Tentatively speaking, values of  $BF_{10}>3$  suggest substantial evidence,  $BF_{10}>10$  suggest strong,  $BF_{10}>30$  very strong, and  $BF_{10}>100$  suggest decisive support for the  $H_A$  (Lakić, 2019; Wetzels & Wagenmakers, 2012). On a multivariate level, significance was assessed on two levels (Faulkenberry, 2020). First, we used  $BF_M$  to determine which specific model (i.e., predictor combination) has the biggest odds increase after observing data. Second, we used  $BF_{inc}$ , to determine the odds of a specific predictor after the data are known.

## Results

First, we established that 11 ML tasks conformed to a well-fitting single factor structure (Rossee, 2012): CFI=.99, TLI=.98, RMSEA=.06, SRMR=.08;  $MA=.72$ ,  $AVE=.53$ ,  $\alpha=.92$ ,  $\omega=.83$ .

The average ML achievement score was modest, with 51% success rate (i.e.,  $M=16.87$ ,  $SD=9.54$ ).

On a bivariate level, decisive evidence was observed for ML score correlations with the AS ( $r=-.44$ ,  $BF_{10}>100$ ) and GPA ( $r=.37$ ,  $BF_{10}>100$ ). Strong evidence was observed for a correlation with the IS ( $r=.29$ ,  $BF_{10}=13.48$ ). Substantial evidence was observed for a correlation with Conscientiousness ( $r=.25$ ,  $BF_{10}=3.93$ ).

Based on the Bayesian linear regression analysis, the strongest support (the largest posterior model odds –  $BF_M$ ) was obtained for a model including the AS & GPA as predictors of the ML score (Table 1).

Table 1: Bayesian linear regression model comparison.

Bayesian predictive models	$BF_M$	$R^2$
AS + GPA	74.69	.295
Conscientiousness + AS + GPA	69.78	.316
Agreeableness + AS + GPA	41.40	.310

Note: Only best three models are shown.

AS and GPA explain 29.5% of the ML score's variance, with posterior odds suggesting much stronger support for the importance of the AS as a predictor, than GPA (Table 2).

Table 2: Posterior summaries of predictor coefficients.

Predictors	BF <sub>inc</sub>	M	95% CI	β
AS	760.36	-4.77	[-6.94, -2.27]	-.398
GPA	95.68	4.77	[2.19, 7.67]	.317

Notes: Only predictors from the model with the highest posterior odds are shown. BF<sub>inc</sub>=inclusion Bayes factor. M=model averaged posterior. 95% CI=credible interval for the model average posterior. β=regression correlation.

## Discussion

Similar to PISA and TIMSS findings (Džumhur, 2019a, 2019b), the results confirm that B&H students indeed have a modest ML. Students' school achievement is moderately correlated with the ML score, which means that we cannot simply assume that the highest grades students will automatically be proficient at the real-world math problems. This also implies that helping lower achieving students get better grades under the current curricular criteria will likely not yield a very big boost in ML scores.

Surprisingly, personality was very weakly associated with the ML scores. The only notable exception is Conscientiousness, which is expected, since it is a well-known correlate of achievement (Poropat, 2009).

Similar to previous findings on scientific misconceptions (Subotić et al., 2020), an ATS dimension, specifically AS – which measures the animosity and rejection of science and scientists, emerged as the strongest and most reliable correlate of ML. In fact, on a multivariate level, among all the predictors, AS and GPA, emerged as two most important predictors of ML, with the former being more reliable. Increase in GPA and decrease in AS predict better ML. In other words, having better grades will imply student being better at functional math usage up to a point. However, simultaneously it is also important for students not to detest science – these attitudes do not have to be necessarily positive; they just should not be negative. This impact and origin of 'negativity towards science' is something that clearly needs to be explored in the context of B&H's school curriculum and instructional practices, as it clearly represents an obstacle towards students being able to recognize its value and utilize math (and arguably science in general) in an applied, real-world circumstances. This finding also adds to the body of evidence suggesting that changing the attitudes towards science might potentially play a major role in improving scientific literacy among the B&H students.

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*WORK PSYCHOLOGY*

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# Work interference with personal life and Turnover Intention: Mediating Role of Job Satisfaction

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## Abstract

Turnover intention refers to an employee's voluntary intention to leave an organization. This study aimed to determine whether the relationship between work interference with personal life (WIPL) and employees turnover intention is mediated by job satisfaction. The sample consisted of 182 employees (48,4% female). We used the Work Interference with Personal Life Scale, Turnover Intention Scale and Job Satisfaction Scale. Results of mediation analysis showed that a total direct effect of the WIPL on the turnover intention is significant. When the job satisfaction variable is entered as a mediator, the effect of WIPL on the turnover intention becomes insignificant. There is a significant indirect effect of the WIPL on the turnover intention through job satisfaction, such that the WIPL predicts a higher turnover intention through lower job satisfaction. This study revealed that one of the mechanisms by which WIPL can trigger employee's turnover intention is through reducing job satisfaction. In other words, WIPL evokes lower job satisfaction, without which the employee's tendency for turnover intention wouldn't be activated.

**Keywords:** work interference with personal life, turnover intention, job satisfaction, mediator

## Introduction

Turnover intention refers to an employee's voluntary intention to leave an organization (Saks, 2006). It has been acknowledged as the best predictor of actual turnover (e.g., Bertelli, 2007; Dalton, Johnson & Daily, 1999; Lee & Whitford, 2007). Turnover causes high costs for the organization relating to recruitment and selection, training new staff, and losing knowledge gained by the employee while on the job (e.g., Hall, 1981; Jones, 2005; O'Brien-Pallas et al., 2006). Furthermore, a high employee turnover rate in an organization negatively influences existing workers motivation, raises workload, and makes work planning difficult (e.g., Belete, 2018; Jha, 2009; Kaya & Abdioğlu, 2010). In short, employees' turnover harms an organization's efficiency, effectiveness, and general performance (Seligman, 2011; Shaw, 2011). Understanding the determinants of turnover intention is important for identifying intervention strategies to reduce turnover intentions.

The Work-life balance is about finding the right balance between an individual's work and personal life and about feeling comfortable with both professional and personal obligations (Clark, 2000). Studies (e.g., Koubova & Buchko, 2013; Houston & Waumsley, 2003; Wilkinson, 2008) have shown that work-life imbalance is related to employee turnover intention. Namely, work interference with personal life (WIPL) has been associated with lower levels of job satisfaction and organizational commitment (Burke & Greenglass, 1996; Kossek & Ozeki, 1998), increased stress and burnout (Anderson, Coffey & Byerly, 2002; Kinnunen & Mauno, 1998; Malik et al., 2010), as well as reduced levels

of general health and energy (Frone, Russell & Barnes, 1996). Hence, it's not surprising that WIPL is significantly positively related to employee turnover intentions.

Job satisfaction is the cognitive, affective, and evaluative response of an individual to their job (Grinberg, 1998). Studies (e.g., Lee, 2012; Shields & Ward, 2001; Steinmetz, de Vries & Tijdens, 2014) have shown that job satisfaction is an important predictor of employees' intentions to leave the job. Less satisfied employees are more likely to quit their jobs than more satisfied employees. Also, studies have shown that job satisfaction is a positive outcome of work-life balance. When an employee perceives that its employer is supportive and helpful in integrating personal and work-related issues, it results in a higher level of job satisfaction and organizational commitment (Widyanty, Daito & Riyanto 2020).

Accordingly, this study aimed to determine whether the relationship between WIPL and employees turnover intention is mediated by job satisfaction.

## Method

### Participants and Procedure

Participants were 182 employees (48,4% female), of age range from aged 20 to 62 ( $M = 35.20$ ,  $SD = 9.93$ ), and with a length of service from 1 to 41 years ( $M = 9.93$ ,  $SD = 8.47$ ). The participants were employed in small and medium-sized enterprises (47,3% in state-owned organizations) from Banja Luka. For the professional job field, 4,9% were from the banking sector, 7,7% from public administration, 11,1% from information technologies, 29,1% from production, 4,4% from gastronomy, 24,7% from healthcare, 4,4% from retail and 13,7% from education. Participants' level of education ranged from a high school degree (20,3%), a college degree (5%), to a university degree (74,7%). For marital status, 44,5% were married, and 55,5% were not married.

Data collection was performed through the paper/pencil method in organizations in which respondents worked. Completing the questionnaire was conducted individually. Participation was on a voluntary and anonymous basis.

### Instruments

Work Interference with Personal Life Scale (Hayman, 2005). This scale is part of the Work-Life Balance Scale and consists of 7 seven-point Likert-type items that measure the impact of work on individuals' personal lives. The total score is calculated as the arithmetic mean of the respondents' answers to all items (theoretical range from 1 to 7). For this study, the scale had good internal consistency:  $\alpha = .89$ .

Turnover Intention Scale (Popov, 2009). The scale consists of 3 five-point Likert-type items. The total score is calculated as a sum of the respondents' answers to all items (theoretical range from 1 to 15). For this study, the scale had good internal consistency:  $\alpha = .90$ .

Job Satisfaction Scale (Judge, Thoresen, Bono & Patton, 2000). The scale consists of 5 five-point Likert-type items that measure general job satisfaction. The total score is calculated as a sum of the respondents' answers to all items (theoretical range from 5 to 25). For this study, the scale had good internal consistency:  $\alpha = .89$ .

## Results

Table 1 shows descriptive statistics and bivariate correlation for all variables in the study.

Table 1: Descriptive statistics and correlations

Scale	<i>M</i>	<i>SD</i>	<i>Sk</i>	<i>Ku</i>	Correlations	
					WIPL	TI
WIPL	2.75	1.17	.56	.11		
TI	6.56	3.73	.73	-.65	.33***	
JS	18.86	4.60	-.85	.40	-.47***	-.63***

Note. WIPL - Work Interference with Personal Life, TI - Turnover Intention, JS - Job Satisfaction  
\*\*\* $p < .001$

The bivariate correlation between the WIPL and turnover intention is positive and of moderate intensity. In contrast, the correlations between job satisfaction, WIPL and turnover intention are negative and moderate to strong intensity (Cohen, 1988).

We used the Hayes' PROCESS for SPSS (Hayes, 2013) for mediation analysis, and the results are shown in Figure 1.



Figure 1: Mediation model, Work Interference with Personal Life (X) on Turnover Intention through (Y) Job Satisfaction (M). Note: \*\*\* $p < .001$ ; CIs were obtained using  $k = 10\,000$  bootstrapping samples.

A total direct effect (*c* path) of the WIPL on the turnover intention is significant. When the job satisfaction variable is entered as a mediator, the effect of WIPL on the turnover intention (*c'* path) becomes insignificant. There is a significant indirect effect (*a\*b* path) of the WIPL on the turnover intention through job satisfaction. The WIPL predicts a higher turnover intention through lower job

satisfaction. Therefore, we can conclude that job satisfaction mediates the relation between WIPL and employees turnover intention.

## Discussion and conclusion

This obtained results are consistent with the results of previous studies (e.g., Houston & Waumsley, 2003; Koubova & Buchko, 2013; Lee, 2012; Shields & Ward, 2001; Steinmetz, de Vries & Tijdens, 2014; Wilkinson, 2008), showing a positive relationship between the WIPL and employees' turnover intentions, and negative relationships between the WIPL and employee's turnover intentions with job satisfaction.

Further, this study revealed that one of the mechanisms by which WIPL can trigger employee's turnover intention is through reducing job satisfaction. In other words, WIPL evokes lower job satisfaction, without which the employee's tendency for turnover intention wouldn't be activated. Keeping in mind that WIPL is associated with increased stress and burnout (Anderson et al., 2002; Kinnunen & Mauno, 1998; Malik et al., 2010), as well as reduced levels of general health and energy (Frone et al., 1996), obtained results are not surprising.

While our findings imply that the impact of WIPL on employee's turnover intentions is rooted in job satisfaction, it is yet unclear how much the dissatisfaction with different aspects of the job (e.g., job demands such as workload, emotional and cognitive demands, changes in tasks, role conflict, role ambiguity, or pay, supervision, coworkers, communication, promotion etc.) contribute to employees' turnover intentions and which of them are the most important. Hence, future studies should fill this gap.

Turnover among the employees is one of the biggest challenges for organizations. Turnover causes high costs for the organization and harms an organization's efficiency, effectiveness, and general performance (Seligman, 2011; Shaw, 2011). Understanding the determinants of turnover intention is important for identifying intervention strategies to reduce turnover intentions.

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*DEVELOPMENTAL PSYCHOLOGY*

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# Body Image and Its Correlates: PISA 2018 Study in Serbia

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## Abstract

Body image refers to the perception of one's own body. How students see their body affects their general experience of themselves and the perception of their well-being which could affect their perception of their achievement. The study represents a secondary analysis of the PISA 2018 Serbian data set. The goal of this study was to examine the connection between adolescents' body image and other well-being variables. Three multiple linear regression analyses were performed, with the body image being the criterion variable. The first set of predictors included variables related to the relationship with others, the second set included variables related to the academic self, the third set included variables related to subjective well-being. Relationships with others explain a third of the body images' variation, which can be explained by the fact that we generally form an image of ourselves through social interaction. The body image by itself is not a good predictor of achievement but is associated with several variables that generally relate to well-being, relationships with others, and the perception of their abilities and success (failure). Based on current results, in the future, it is important to examine the model which suggests that the body image is affected by relationships with others, which further affects the well-being of an individual.

**Keywords:** PISA testing, body image, well-being, relationship with others

## Introduction

The body image represents a person's perceptions, feelings, and thoughts about his or her body (Grogan, 1999). According to previous research, the period of adolescence is crucial in forming the picture of oneself, (Bolognini, Plancherel, Bettschart, & Halfon, 1996). During adolescence, young people experience various shifts in self and body images perceptions. According to the theory of symbolic interactionism (Blumer, 1986), self-picture is constructed in the interaction with other people. The adolescent's body image is formed through interactions with parents, friends, environment, and it could be associated with well-being. Research has shown that parental emotional support is an important factor in an adolescent's body image and self-esteem (Boudreault-Bouchard et al, 2013). Second, research has argued that increased general well-being leads to an increase in adolescent self-esteem (Boudreault-Bouchard et

al, 2013). It has been shown that more resilient young people express higher levels of self-confidence (Askeland et al., 2020). Competitiveness is related to higher self-satisfaction, but also higher anxiety among adolescents (Vealey & Campbell, 1988). We believe that higher competitiveness leads to one's better perception of their body image because body image is related to self-satisfaction. And finally, previous research has shown that peers could have an overwhelmingly negative impact on one's body image and consequentially on his/her health (Kenny, O'Malley-Keighran, Molcho & Kelly, 2017). Previous research which investigated the factors correlated with body image was clinical: it was inspected how body image, well-being, and relations are connected to anorexia, bulimia, depression, anxiety. Only a few studies deal with nonclinical youth and include the correlates from their everyday functioning. The new PISA study included, besides the usual assessment of literacy skills, various questionnaires about well-being, relationships with others (parents, teachers, and friends), body image, etc. In this research, we wanted to examine how pupils in Serbia perceive their body images and what is connected to their well-being in everyday life. We used PISA data from the 2018 study. In accordance with the previous discussion, the variables from the PISA study were grouped into three categories: 1. Relations with others (parental emotional support, parental social connections, teacher support in test language lessons, perceived teacher's interest, satisfaction with friends) 2. Academic self (competitiveness, work mastery, mastery goal orientation, resilience, general fear of failure) 3. Subjective well-being (meaning in life, positive affects, sense of belonging to school). To examine relations between these variables and body image, correlations and linear regressions were used. We assumed that Relations with others will be connected to body image the most because this connection has been confirmed in previous research.

## Method

### Sample

The representative sample of 15-year-old students included 6609 students (49.5% female) from over 200 schools in Serbia.

## Instruments

During the PISA study 2018, in addition to usual achievement tests (reading, mathematics, and science literacy), students filled out several questionnaires that examined their well-being, technical living conditions, financial literacy, school plans, etc. Within the questionnaire on well-being, there was a four-point Likert scale (from strongly disagree to strongly agree) about the body image, with five statements.

Questions about social connection with parents and satisfaction with friends, and questions about parental emotional support, teacher's help in tested language, and perceived teacher's interest from the student's questionnaire were selected as first set of the predictors.

Questions about competitiveness, work mastery, mastery goal orientation, resilience, and general fear of failure from student's questionnaire were selected as second set of the predictors.

Questions about meaning in life, positive affect, and sense of belonging to the school from student's questionnaire were selected as third set of the predictors.

More detailed information about questionnaires, questions, and statements can be found in the *PISA2018 Technical Report, Chapter 16*.

## Procedure

The already collected data from PISA 2018 study in Serbia were analyzed. Three multiple linear regression analyses with three sets of predictor variables were performed, and the criterion variable was always body image.

## Results

The first multiple linear regression, with variables related to relationships with others, explained slightly more than 30% of the body image variance ( $R^2 = .315$ ,  $R = .562$ ,  $F(5, 6296) = 580.109$ ,  $p < .001$ ). Table 1 shows that four of the five variables significantly contribute to the formation of the regression function. The satisfaction with friends and perceived parental emotional support were the most powerful contributor.

Table 1: Regression coefficients for connection with others

	$\beta$	t	p
Perceived parental emotional support	.057	4.771	<.001
Social connections: parents	.217	14.637	<.001
Teacher support in language lessons	.017	1.323	.186
Perceived teacher's interest	.046	3.476	.001

Satisfaction with friends	.340	23.655	<.001
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The second multiple linear regression, which included variables related to academic self as predictors, explained 10% of body image variance ( $R^2 = .102$ ,  $R = .319$ ,  $F(5, 6603) = 149.979$ ,  $p < .001$ ). Data presented in Table 2 shows that three of the five variables (resilience, master goal and competitiveness) significantly contribute to the regression function.

Table 2: Regression coefficients for academic self

	$\beta$	t	p
Competitiveness	.085	4.081	<.001
Work mastery	.009	0.434	.664
Mastery goal orientation	.109	5.059	<.001
Resilience	.110	4.908	<.001
General fear of failure	.043	1.929	.054

The third multiple linear regression revealed that subjective well-being explained 10% of body image variance ( $R^2 = .100$ ,  $R = .316$ ,  $F(3, 6605) = 243.681$ ,  $p < .001$ ). All three variables (Table 3) make a significant contribution to the formation of the regression function.

Table 3: Regression coefficients for subjective well-being

	$\beta$	t	p
Eudaemonia: meaning in life	.100	5.126	<.001
Subjective well-being: Positive affect	.086	4.624	<.001
Subjective well-being: Sense of belonging to the school	.163	9.030	<.001

## Conclusion

The results revealed that all three groups of variables (connection with others, academic self, and subjective well-being) are connected with the body image. However, body image shares the most variations with relationships with others. It indicated that the adolescents' perception of their body is associated with their relations with significant others (parents, peers, teachers). Such results are in line with the theory of symbolic interactionism, according to which an individual builds an image of himself through symbolic interaction with others.

Since this is the correlational type of research, we cannot conclude about causal relationships between body image and

relationships with others. The next step would be to determine whether relationships with others shape the body image or adolescents with more positive body image establish better communication with others.

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# Adolescents' Well-Being and Typical Patterns of Their Leisure Time Behaviors

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## Abstract

How adolescents spend their leisure time has proven to be important for their well-being. The aim of this work was to determine if there are connections between certain patterns of leisure time behaviors and specific aspects of well-being. The sample included 1358 secondary school students. Seven leisure time patterns were extracted and latent variables interpreted as an orientation towards Pop Culture, Culture/Art/Music, Films/TV-Shows/Internet, Science/ Politics, Information Technologies, Going Out, and Sports. Well-being scales include the following five aspects: Engagement (E), Perseverance (P), Optimism (O), Connectedness (C), and Happiness (H). Although small, significant positive correlations were found between Pop Culture and P, O, C, H; b) Culture/Art/Music and E; c) Films/TV-Shows/Internet and E; d) Science/Politics and P, O; e) IT and E, P; f) Going Out and O, C, H; g) Sports and E, P, O, H. Pop Culture, Going Out, and Sports contributed most to the total well-being variance and might be proven overall beneficial. Orientations towards science, politics, and IT are considered more serious activities that require perseverance over time. Only for perusing Culture/Art/Music negative correlations were found, indicating lower degrees of connectedness and happiness. In conclusion, certain leisure time behavior patterns are related to different aspects of adolescents' well-being.

**Keywords:** adolescents; well-being; EPOCH scale; leisure time; behavior patterns

## Introduction

There is no universal definition of the well-being concept. The WHO<sup>1</sup> included it in the broader conception of mental health as a “state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively, and is able to make a contribution to his or her community”. Considering adolescence in the context of positive development (Larson, 2000), well-being in this paper represents not only the absence of negative symptoms, but the presence of strengths, wellness, or so called flourishing (Seligman & Csikszentmihalyi, 2000). Engagement, perseverance, optimism, connectedness, and happiness represent important domains of well-being and predictors of positive adult outcomes in adolescence (Kern et al., 2016). One of the relevant factors for the well-being

maintenance is how adolescents use and evaluate their leisure time (Larsen et al., 2012).

Leisure satisfaction leads to life satisfaction and better stress management in later life (Shin & You, 2013). However, popular (patterns of) activities during adolescence tend to change over time (Auhuber et al., 2019). For instance, the internet and social media occupy most of the youth's time nowadays, in comparison to their peers a few decades ago. Within the first research of this type in Serbia (Stepanović et al., 2009), five adolescents' leisure time behavior patterns were extracted: academic achievement (science, culture, volunteering, reading, theatre), sports (exercising, watching, visiting manifestations), entertainment (magazines, celebrities, folk music, love novels), going out (cafes, discos, clubs, concerts), music & computers (techno, electronic, hip hop, pop).

## Aim

The main aim of this work was to map the predominant patterns of adolescents' leisure time behaviors and determine if identified behavior patterns are connected to certain subjective well-being aspects.

## Method

### Sample

1358 secondary school students (61.8% – secondary vocational; 38.2% – grammar) participated in the study. 51.3% were in the first class, others in the third, and 44% were boys.

### Instruments

**Questionnaire about adolescents' leisure time.** This work was a part of a broader study that investigated adolescents' everyday life and leisure time. The items covered the following aspects: studying, extracurricular activities, hobbies, reading habits, going out, TV content, computers, and social media.

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<sup>1</sup><https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response>

**The EPOCH Measure of Adolescent Well-being.** The scale consists of 20 items (Likert, 1-5), classified into five different domains that support higher levels of well-being:

1. Engagement (*E*) – the capacity to become absorbed in and focused on something; involvement and interest in life activities and tasks (very high levels have been referred to as “flow”).
2. Perseverance (*P*) – refers to the ability to pursue goals to completion, even in the face of obstacles (similar to C in Big Five).
3. Optimism (*O*) – hopefulness, confidence about the future, a tendency to view things favorably; explanatory style: evaluating negative events as temporary, external, and specific to a situation.
4. Connectedness (*C*) – a sense of satisfying relationships with others, believing that one is cared for, loved, esteemed, and valued, and providing friendship or support to others.
5. Happiness (*H*) – steady states of positive mood and feeling content with one’s life, rather than momentary emotion (Kern et al., 2016).

## Results

### Preliminary Analysis

**The questionnaire about adolescents’ leisure time.** 45 items were selected for factor analysis (KMO = .822, Bartlett’s Test of Sphericity  $p < .000$ ). Principal Axis Factoring and orthogonal rotation (Varimax with Kaiser Normalization) were used. Seven major factors (46% of the variance explained) were extracted, resembling the patterns of leisure time behaviors. *Factor scores* were saved for the main analysis, all with Cronbach’s Alphas  $> .70$ . Factors were interpreted as: Pop Culture (teenage topics, horoscope, health and fashion, love novels, magazines, pop music, etc.), Culture/Art/Music (museums, galleries, jazz, rock, r&b, punk, metal, blues, reggae), Films/TV-Shows/Internet (movies and TV-shows, online shopping, social media, etc.), Science/Politics (related topics and shows, documentaries, watching news, etc.), Information Technologies (IT) (graphic design, programming, computers, etc.), Going Out (cafes, clubs, taverns, parties), and Sports (following, watching, visiting events).

**The EPOCH Measure of Adolescent Well-being.** The items showed satisfying internal consistency (KMO = .904, Bartlett’s Test of Sphericity  $p < .000$ ). Exploratory factor analysis confirmed the theoretically suggested five-factor model (explaining 58% of variance): Engagement, Perseverance, Optimism, Connectedness, and Happiness. Generalized Least Squares was used as an extraction methods, with oblique rotation (Promax with Kaiser Normalization). The *composite measures* were created (Cronbach’s Alphas  $> .70$ ) according to the theory.

## Main Results

Pearson’s correlations between factor scores and composite measures are presented in Table 1. Pop Culture and Sports have the strongest and most represented correlations with the aspects of well-being. The only pattern with negative correlations is Culture/Art/Music.

About 10% ( $F(3, 1021) = 42.84, R^2 = .11, p < .00$ ) of total well-being variance is explained by these patterns: Pop Culture ( $R^2 = .05, p < .00$ ), Sports ( $R^2 = .04, p < .00$ ), and Going Out ( $R^2 = .02, p < .00$ ).

Table 1: Pearson’s correlations between adolescents’ behavior patterns and well-being aspects.

Patterns	EPOCH Scale				
	E	P	O	C	H
Pop Culture	.031	.211**	.135**	.281**	.110**
Culture /Art/Music	.126**	-.008	-.033	-.077*	-.114**
Films/TV /Internet	.095**	-.025	.033	.061*	.061*
Science /Politics	.052	.095**	.081**	-.037	.019
IT	.129**	.078**	.048	.001	.039
Going Out	.048	.031	.115**	.108**	.209**
Sports	.173**	.181**	.163**	.041	.204**

\* $p < .05$ , \*\* $p < .01$

## Discussion and Conclusions

The obtained results do not represent the groups of adolescents, but specific behavior patterns (due to factor analysis). Observed individually, identified patterns realize unique correlations with specific aspects of well-being. Henceforth, one adolescent could be engaged in several different patterns, and practicing certain types of activities could contribute to different adolescents’ well-being aspects.

Following Pop Culture and Sports are considered most beneficial groups of activities among young people. Engaging in Pop Culture reflects the finding that adolescents appreciate unstructured, fun, relaxing, and social activities (Pešić et al., 2012). Although following Sports does not correlate with Connectedness, it might be considered thrilling and requires a certain investment. Films/TV-Shows/Internet has higher Engagement scores, possibly due to social media (Vuletić & Krnjaić, 2019a). As one of the most valued activities during adolescence (Pešić et al., 2012), Going Out correlates with optimism and happiness. Together with Pop Culture and Sports, it explains the most well-being variance.

Science/Politics and IT are considered more serious leisure patterns, both requiring Perseverance (Conscientiousness - Kern et al., 2016) and constant informing. IT might include mastering skills that are oriented towards employment and career (Vuletić & Krnjaić, 2019b). Culture/Art/Music pattern

requires high Engagement and specific interests (such as visiting museums and galleries), but it is the only pattern with negative correlations (Connectedness and Happiness).

This research is accordant with previous findings that adolescents predominantly enjoy unstructured, fun, and relaxing leisure activities (Pešić et al., 2012), which are associated with hedonistic rather than eudemonic comprehension of well-being (Žegarac & Krnjaić, 2019). The main conclusion is that different leisure time behavior patterns have distinctive connections with different aspects of well-being.

There are several limitations to this research. Firstly, questions regarding behaviors during leisure time were extracted from the broader questionnaire, so the items might have suffered overlapping. Henceforth, it is crucial to develop more sophisticated measures that truly represent behavior patterns. Additionally, obtained correlations are very small and merely show tendencies in behavior. Considering their well-being, adolescents should be asked aimed questions about the benefits of these patterns, for example, via focus groups. Besides developing refined measures and methods, future research should also focus on clusters, enabling the generalization of the results onto specific groups of adolescents. Additionally, in the context of general well-being, it is significant to consider the developmental potential of these patterns and their role as possible coping strategies in adolescence (Vuletić et al., 2021).

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# Psychometric Characteristics of the Test of Emotion Comprehension (TEC) in Serbian-Speaking Children from Bosnia and Herzegovina

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## Abstract

Although child emotionality is a topic of particular professional and public interest, there is still a lack of suitable instruments for assessing emotional competences of preschool or school-age children. The aim of our study was to explore psychometric qualities of the Test of Emotion Comprehension (TEC; Pons & Harris, 2000) on a sample of children from Bosnia and Herzegovina. Our sample comprised 202 elementary school students (6 to 11 years) who were tested individually. In order to generate suitable variability, the students were selected by their teachers based on the descriptions of typical profiles of the following categories: an emotionally stable child (2 students from a class), a child showing externalized behavior problems (1 student), and a socially withdrawn child (1 student). Although our analysis indicated an adequate level of TEC's content validity, we observed weak discriminatory power for the considered age range. Consequently, internal consistency coefficients were of substandard magnitude and we found no evidence for the hypothesized hierarchical structure of the test components. In our view, the TEC has certain qualities, but it seems to be too easy for the large majority of school-aged children; therefore, it should be investigated whether its current version is more suitable for testing preschool children.

**Keywords:** TEC; test adaptation; emotional competence; children; elementary school students.

## Introduction

To develop emotional competencies in childhood is publicly and professionally claimed to be of the utmost importance. Nevertheless, when researchers and practitioners have to decide on what instrument to use to assess them, they are left with few psychometrically supported options (cf. Halle & Darling-Churcill, 2016, on extant early childhood measures). This dearth becomes particularly evident for psychologists in the Western Balkans region when they would like to assess emotional development of preschoolers and lower-grade elementary school students up to 12 years of age. Therefore, we wanted to evaluate whether the Test of Emotion

Comprehension (TEC; Pons & Harris, 2000) would partially fill this gap.

The TEC represents a promising measure for several reasons. First, it focuses on assessing the foundation of emotional competence – understanding emotions – within a relatively large range from 3 to 11 years of age. Second, it does so by objectively assessing nine different components which are purported to stand in a hierarchical organization: (1) recognition of facial expressions, (2) understanding of external causes of emotions, (3) understanding of desire-based emotions, (4) understanding of belief-based emotions, (5) understanding of the influence of a reminder on present emotional states, (6) understanding of the possibility to regulate emotional states, (7) understanding of the possibility of hiding emotional states, (8) understanding of mixed emotions, and (9) understanding of moral emotions (Pons, Harris & de Rosnay, 2004). Third, the administration is relatively quick with altogether 19 items, designed as non-verbal stimuli with easily translatable instructions for use in international research. Not only has it been translated to more than 20 languages, but it has been still drawing significant attention of researchers interested in typical or atypical child development (for a review see Introduction section by Cavioni et al., 2020).

## Method

### Participants and Procedure

Our final sample comprised 202 students (102 females, 50.5%) attending grades 1 to 5 (6 to 11 years of age) from three towns in Republic of Srpska (Bosnia and Herzegovina). To obtain a sufficiently variable sample with regard to emotional competence, but also to reasonably evaluate the TEC's concurrent validity through the known-groups method, we opted for a purposive sampling. Hence, we instructed the teachers to select from their classes: (a) two students who they perceived as “emotionally stable, socially adequate, mostly in a positive mood, and disinclined to behave impulsively or feel moody” (n = 107), (b) one student

who they perceived as having externalizing problems, often misbehaving, disrupting classroom atmosphere, having a hard time to focus their attention or control their behavior“, and (c) one student who they perceived as “withdrawn, socially restricted, shy, tending to be anxious or sad”. The Ministry of Education of the Republic of Srpska approved the study, and we obtained signed informed consent from the parents before the testing day. The TEC versions (male and female versions) were administered individually by a graduate psychologist who also recorded the answers.

### Data Analysis

We conducted descriptive analysis procedures both on the item-, component- and scale-level. To examine the TEC’s internal structure we calculated internal consistency coefficients and Mokken’s scalability coefficient, and we conducted an exploratory factor analysis on the matrix of smoothed tetrachoric correlations. Since we observed a few outliers, we report results of non-parametric procedures for testing associations of the sum score with three grouping variables (emotional type, gender, school grade), but note that all reported results were replicated using parametric techniques.

The analyses were conducted using FACTOR (Lorenzo-Seva & Ferrando, 2021), Jamovi (The jamovi project, 2021), JASP (JASP Team, 2021) and R packages psych (Revelle, 2019) and Mokken (van der Ark, 2012) with the default prior parameters.

### Results

The test proved to be overly easy for most participants, i.e. most items had low difficulties in our sample. Specifically, 9 out of 19 items were successfully solved by 95% or more participants, while 13 of 19 items were solved by 90% or more participants, with the most difficult item solved by almost two-thirds of the sample (64%). Consequently, the distribution of the sum scores – obtained by summing a success on nine components – was markedly asymmetric ( $M = 7.36, Mdn = 7.00, SD = 1.39, Sk = -0.75, p_{Sk} < .001$ ).

This lack of variability inevitably led to suboptimal estimates of the TEC’s internal structure. Internal consistency coefficients were particularly low when they were calculated using traditional formulas ( $\alpha = .44; \omega_T = .46$ ), although they reached higher values ( $\alpha = .67; \omega_T = .73$ ) when calculated on the matrix of tetrachoric correlations. Furthermore, Mokken scaling did not provide evidence for the assumption that the test components were hierarchically ranked in our sample ( $H = .11$ ). Finally, factor analysis suggested that almost all components loaded substantially ( $\lambda > .32$ ) on the first unrotated factor (32.1% of common variance). The exceptions were Component 7 (Hiding) ( $\lambda = .21$ ), and

particularly Component IV (Belief), for which we observed zero loading and negligible correlations with the majority of other components.

When it comes to the known-groups concurrent validity, we obtained mostly satisfactory results. Figure 1 shows that, on average, emotionally stable students achieved the highest scores, those characterized as externalized misbehavers were in the middle, whereas socially withdrawn students scored the lowest (Kruskal-Wallis test:  $\chi^2(2) = 21.12, p < .001$ ). Figure 2 presents a significant association with age/grade  $\chi^2(4) = 24.67, p < .001$ ; however, one can notice that this effect originated from the difference between the first graders and all other students. Interestingly, we found some evidence for the lack of gender differences (males:  $M = 7.35, SD = 1.44$ , females:  $M = 7.37, SD = 1.34$ ; Mann-Whitney  $U = 5111.5, p = .98, BF_{01} = 6.25$ ).<sup>2</sup>

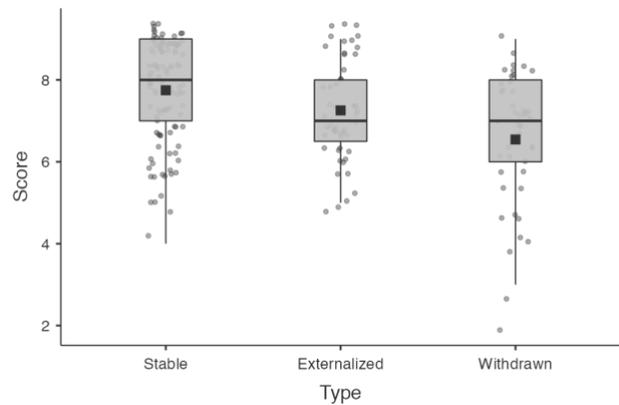


Figure 1: Total TEC score (jittered) disaggregated by student profiles.

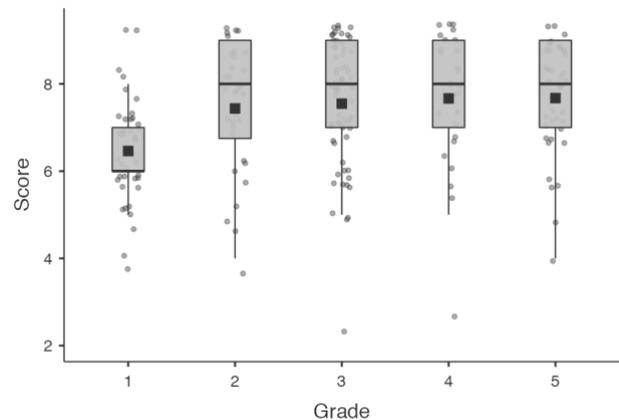


Figure 2: Total TEC score (jittered) disaggregated by school grade (1 = age 6 to 7; 5 = age 10 to 11).

<sup>2</sup> All quoted findings for the types, school grade and gender were replicated within a three-way ANOVA with no interaction effects being statistically significant.

## Discussion

The results left us with mixed feelings about the TEC. Due to its easiness and the ceiling effect we cannot recommend it in the current form to researchers who would like to discriminate across the whole span of the ability to understand emotions in children aged seven or older. On the other hand, the TEC might be useful to study six-year-olds or younger children. Alternatively, it could be used by practitioners as a screening tool for children older than seven, with a score of 6 (or even 7) and lower hinting at some need for additional psychological attention.

The ceiling effect for children seven or older has been already evidenced in other countries (see Table 2, Pons, Harris & de Rosnay, 2004; Table 3, Rocha et al. 2015; Table 3, Cavioni et al., 2020). This limitation was raised by Rocha and coauthors, together with some other ones we could attest to by analyzing participants' answers. Namely, several items could be improved by wording the answers differently (particularly one related to Component 4), or removing the depiction of commercial soft drinks (Cola).

Although our sample was relatively small, restricted to only one end of its appropriate age range, and limited by the asymmetry in the score distribution, we believe that we gleaned enough insight into its suitability for testing emotion understanding. In our view, the current version should be redesigned with more engaging drawings, administered via digital devices. That said, some items should be carefully revised content-wise, particularly those related to Component 4, which were also found to contribute to gender effects in previous studies (Fidalgo, Tenenbaum & Aznar, 2018).

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# Feeling „In Between“: Emerging Adulthood, Secondary Separation and Individuation, and Identity Formation

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## Abstract

This research examines how adolescents and emerging adults solve the task of separation and individuation and identity formation. An additional goal of the research is to examine the differences in the process of separation and individuation, and identity formation between adolescents and emerging adults. The results show that adolescents achieve lower scores on healthy separation and higher scores on engulfment anxiety, and that there are no statistically significant differences in the process of identity formation between the two groups. However, the process of secondary separation and individuation is related with identity formation; adaptively resolved tasks of separation and individuation contribute to identity formation.

**Keywords:** secondary separation and individuation, emerging adulthood, adolescence, identity formation.

## Introduction

In the last thirty years, the way of life and socio-economic-cultural requirements have changed, which has invited some authors to consider the introduction of an additional period of life in the human life cycle. This period is called emerging adulthood, and it is positioned between the period of adolescence and young adulthood and includes young people aged 18 to 25 years. What is common for the period of adolescence and emerging adulthood are developmental tasks such as identity exploration and the process of secondary separation and individuation (Petrović & Zotović, 2015). Identity formation is a developmental task of examining and changing one's own role, testing multiple identities and finally shaping one that best suits the internal processes and needs of the person (Trbojević, 2016).

The process of secondary separation and individuation is a developmental task during which a person develops in the direction of an independent individual. Bloss has (1979) recognized, in the late 1970s, adolescence as a period of a secondary separation and individuation. More precisely, separation denotes the intrapsychic developmental direction of differentiation (separation from parents), while

individuation characterizes the development of intrapsychic autonomy (Edward, et al., 1992). Although individuation is often seen as a process of complete separation of the adolescent from the parents, it should be emphasized that this is not the case, i.e. that this process actually implies the existence of independence, but also maintaining emotional contact with parents. The difference between primary and secondary separation-individuation is that physical differentiation encourages psychological autonomy in the case of the primary separation process, while in the secondary separation differentiation must be achieved at the intrapsychic level (Abrams & Goldman, 1976). Both separation and individuation have a very important role in the development of the individual, especially in the process of identity formation (Popadić, 2016). Although research on the effects of secondary separation and individuation on identity formation is methodologically inconsistent, they emphasize the importance of healthy separation and individuation on the formation of consolidated identity (Sigimura et al., 2018). Higher degree of autonomy and optimal closeness with parents, proved to be important for the psychological well-being of the individual, higher degree of self-esteem and concluded identity (Alonso et al., 2018; Filus et al., 2019).

Unsuccessfully resolved separation and individuation consequently lead to difficulties in the formation of identity, but also to the development of Adult separation anxiety disorder. Emerging adulthood represents a particularly risky developmental period for the development of Adult separation anxiety disorder (Bassi et al., 2021). Social tasks of emerging adulthood (moving away from home, getting married, being financially and emotionally independent) in terms of developmental-stage require from young people to become more independent and explore various life domains, struggling for identity exploration, instability, self-focus, and feeling in-between (Arnett, 2007). The feeling in between emerges because they do not perceive themselves entirely as adults, and see themselves as not fully formed 'individualistic qualities of character' (Bassi et al., 2021).

Precisely because of the small number of studies on the process of separation and individuation in adolescents and emerging adults, this research examines the process of secondary separation and individuation in adolescents and emerging adults, as well as whether there is a difference between adolescents and emerging adults in this process, and in the process of identity formation. Then, bearing in mind that healthy separation and individuation contribute to the formation of identity, this research examines the relationship between the process of separation and individuation and identity formation in Serbian adolescents and emerging adults.

## Method

### Participants and procedure

The sample consisted from 346 participants (294 female), from territory of Serbia, aged from 15 to 25 years old (Mage=18.46). Over 300 participants reported living with parents. Sample was divided into two groups on the basis of Arnett's proposition about the age when individual enters emerging adulthood (2007):

1. adolescents, aged 15 to 17 years (N = 124),
2. emerging adults, aged 18 to 25 years (N = 222).

Participants filled out online questionnaires during 2020. They were informed that data will be used for scientific purposes only, and were granted anonymity.

### Measures

*The Separation-Individuation Test of Adolescence – SITA* developed by Levine, et al. (1986) and adapted by Smojver-Ažić (1998) consists from 44 items directed at identifying the process of separation and individuation. On this sample factor analysis was performed on 42 items (2 items had low factor saturation) where 5 factors emerged (in line with previous research, e.g.: Popadić, 2016): healthy separation (8 items,  $\alpha=.88$ ); need denial (10 items,  $\alpha=.86$ ); engulfment anxiety (11 items,  $\alpha=.83$ ); nurturance-symbiosis (6 items,  $\alpha=.69$ ); and separation anxiety (11 items,  $\alpha=.77$ ). Five point Likert scale was used.

*The Modified Erikson Psychosocial Stage Inventory – MEPSI* developed by Kline Leidy & Darling-Fisher (1995) originally has 8 subscales for each of 8 psychosocial stadiums proposed by Erikson. In this research we used 10 items ( $\alpha=.71$ ) oriented toward stadium of adolescence regarding Identity versus Confusion (e.g. *I've got a clear idea of what I want to be*) and the sum of responses on all of them was used as identity formation score. Five point Likert scale was used.

## Results

Descriptive statistics of all variables are shown in Table 1.

Mean scores of complete sample show higher scores on Healthy separation and Identity formation compared to minimum and maximum of subscales.

Table 1: Mean scores of investigated variables.

	Min/Max of complete sample	Mean of complete sample	Adolescents (N=124)	Emerging adults (N=222)
Healthy separation	8/40	34.37	33.52	34.86
Need denial	10/41	17.19	17.73	16.99
Engulfment anxiety	11/51	27.26	28.55	26.54
Nurturance-symbiosis	6/30	17.96	17.52	18.16
Separation anxiety	7/34	20.27	21.11	19.80
Identity formation	10/50	37.89	37.19	38.27

In order to examine differences between adolescents and emerging adults in all five subscales of separation-individuation test, and identity formation, ANOVA analysis was performed. As seen in Table 2. Adolescents and emerging adults statistically differ in subscales: Healthy separation and Engulfment anxiety. Adolescents achieve lower scores on Healthy separation and higher scores of Engulfment anxiety, then emerging adults.

Table 2: Results of ANOVA analysis.

	F(1,345)	Sig.
<b>Healthy separation</b>	<b>3.887</b>	<b>.049</b>
Need denial	1.327	.250
<b>Engulfment anxiety</b>	<b>5.586</b>	<b>.019</b>
Nurturance-symbiosis	1.259	.263
Separation anxiety	3.408	.066
Identity formation	1.808	.180

Having in mind, that adolescents and emerging adults do not statistically differ in the degree of identity formation, linear regression was performed on whole sample in order to identify relevant predictor for identity formation. As seen in Table 3, subscales of separation individuation represent significant predictive model of identity formation, where subscales: Healthy Separation; Need Denial; Engulfment Anxiety; Nurturance-Symbiosis also singled out as relevant individual predictors.

Table 3: Results of linear regression.

	F (5,345)	Sig.	Adjusted R <sup>2</sup>	β
Healthy separation				.267*
Need denial				-.323*
Engulfment anxiety	26.921	.000	.273	-.154*
Nurturance-symbiosis				-.165*
Separation anxiety				-.087

\*p<.01

## Discussion

Successfully resolved tasks of adolescence and emerging adulthood- identity formation and secondary separation and individuation – contribute to psychological wellbeing of individuals later in life (Alonso et al., 2018; Filus et al., 2019). Having that in mind, this research examined the process of secondary separation and individuation in adolescence and emerging adulthood. Today, there are more and more evidence that emerging adulthood represent especially risky developmental period because of changes in socioeconomic and cultural aspect of society. That is why it is necessary to investigate the processes that unroll during this period. Results of this research show that in Serbian sample of emerging adults, process of separation and individuation is directed toward Healthy separation primarily. Emerging adults achieve above mean scores on this subscale. But, they also achieve higher results on Engulfment and Separation anxiety. The major part of the sample still lives with parents, which can result to the obtained higher score. Living with parents during emerging adulthood has shown to be related with separation anxiety and delayed fulfilment of social tasks as moving out, starting committing relationship and entering marriage (Beyers & Seiffge-Krenke, 2007). Prolonged staying at family home twirls autonomy and sense of self-esteem, which can contribute to development of Adult separation anxiety disorder (Bassi et al., 2021). Even though emerging adults are reporting that the process of secondary separation and individuation is directed toward healthy separation, obtained results regarding anxiety are in line with the process itself and the cultural context. Separation anxiety is one of the emotional responses to this process, and the obtained results call for further investigation of gender differences, as well as of influence that quality of parent-child relationship has on the process of separation and individuation.

When compared with adolescents, emerging adults achieve statistically higher result on Healthy separation, and lower result on Engulfment anxiety. These results contribute to understanding the developmental path of separation and individuation process, where with age the process moves from dependence toward independence - intrapsychic developmental direction of differentiation (separation from

parents), and the development of intrapsychic autonomy. Earlier research found that adolescents have a sense of restrain from parents, and that they are in the middle of the process of gaining individualism (Meeus et al., 2005). With entering into adulthood, tasks slightly change, but still refer to the process of separation and individuation, but with more autonomy gained from parents.

When identity formation is in question, there are no significant difference in the degree of formatted identity between adolescents and emerging adults. The relation between process of secondary separation and individuation and identity formation were confirmed. If individual successfully resolves secondary separation and individuation, they will have a more consolidated identity. Primarily, those individuals who have obtained physical and emotional independence from parents, but are not in denial about the need for quality relationships, and don't perceive adulthood as lonely period of life, will have a more distinct feeling of identity. Earlier research found that achieving healthy independence is related with higher self-esteem and more consolidated sense of self and identity (Meeus et al., 2005).

Obtained results represent the base for further research of processes in emerging adulthood, specially having in mind fact that in today's society more and more young people continue to live with parents after adolescence.

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# Relation Between the Affective Valence of Words and the Affective Valence of Their Associative Fields in Different Age Groups

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## Abstract

The aim of the study was to examine the intensity of relations between the affective valence of words and the affective valence of the most frequent associations from their associative fields in participants from four age groups (5-, 9-, 13- and 17-year-olds). Forty nouns and their associative fields (twenty the most frequent associations) selected from the Developmental associative dictionary of Serbian language were rated by participants in order to obtain their affective valence ratings. Results showed high and statistically significant positive correlations between the affective valence of stimuli-words and the average valence of their associative fields in all four age groups. Additional analysis implied no statistically significant differences in the strength of the relation of stimuli-words and their associative fields between different age groups. These findings support dimensional models of emotion, which suggest an early development of competence for the affective valence processing in language and its stability during childhood and adolescence, despite changes in other affective and semantic dimensions.

**Keywords:** connotative meaning; associative fields; semantic development; valence

## Introduction

Previous studies in the field of language development have suggested that different aspects of the meaning of concepts can have different developmental trajectories. Several studies suggested that the connotative meaning (affective experience) is formed relatively early in development. For example, three-dimensional structure of the affective meaning of words, with Evaluation, Potency and Activation dimensions (Osgood, Suci, & Tannenbaum, 1957), can be observed in 7-year-olds (McManis, Bradley, Berg, Cuthbert & Lang, 2001; Sabater, Guasch, Ferré, Fraga & Hinojosa, 2020; Skrandies, 2011). Other studies suggested that at the age of 5 to 7 years, Evaluation is the only dimension of affective meaning

that can be observed reliably (Gordon & Williams, 1973). Additionally, positive correlations between arousal ratings in children and adults were documented as well (McManis et al., 2001; Skrandies, 2011).

Developmental studies conducted in the field of word associations showed that children tend to produce more idiosyncratic answers, loosely and most often thematically related to stimuli-words. With age the number of idiosyncratic answers decreases and taxonomic relations become more represented in associative fields (Macizo, Gomez-Ariza & Bajo, 2000). Pantelić (2009) studied the relation between affective meaning of stimuli words and the affective meaning of their associative fields in adults using Janković's (2000a) three-dimensional (VACe) model of affective experience. According to this model, the structure of our affective experiences can be best represented by three basic evaluative dimensions: valence, arousal and cognitive evaluation (Janković, 2000b, 2014). Results of that study suggested significant congruence between three dimensions of affective meaning of stimuli-words and affective meaning of their associative fields (Pantelić, 2009).

Since the valence is the most important dimension of our affective experiences, the aim of this study was to explore relations between affective valence of stimuli-words and affective valence of the most frequent associations from their associative fields in four age groups (5-, 9-13- and 17-year-olds).

## Method

### Participants

As part of a course requirement, forty-nine students (85.7% females) from the Department of Psychology, University of Belgrade participated in the study ( $M_{age} = 19.2$ ;  $SD = 1.08$ ).

## Stimuli

Forty stimuli-words (nouns) and twenty the most frequent associates from their associative fields were used in the study (840 words in total). Words were selected from the Developmental associative dictionary of Serbian language (Janković, 2010) and valence ratings were selected from the Connotative Dictionary of Serbian language (Janković, 2000c). For 430 words, valence ratings were already collected in the Connotative Dictionary, and for the remaining 410 words valence ratings were collected in this study.

## Procedure

Participants rated 410 words on the Connotative differential scale CD-9 (Janković, 2000a) administered on the computer using Qualtrics web-based survey software. Valence of words was measured by bipolar seven-point unpleasant-pleasant scale. Words were presented on the computer screen in groups of 15 words and in randomized order for each participant.

## Results

First, we calculated the average valence ratings of associative fields for all stimuli-words separately for each age group. Associative fields were represented by 20 the most frequent associations for each stimulus-word. The correlation between valence ratings for stimuli-words and the average valence ratings for their associative fields were calculated separately for each age group. The results showed that valence of associative fields was highly correlated with valence of stimulus-words in all age groups (Figure 1).

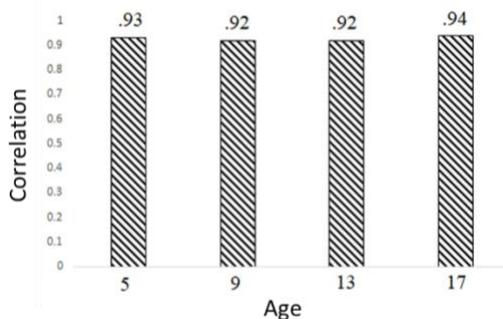


Figure 1: Correlation between the valence of stimuli-words and valence of their associative fields in different age groups

All correlations were high and statistically significant:  $r(38)=.93$ ,  $p<.01$ ,  $r(38)=.92$ ,  $p<.01$ ,  $r(38)=.92$ ,  $p<.01$ ,  $r(38)=.94$ ,  $p<.01$  for the 5-, 9-, 13-

and 17-year-olds, respectively. Additional analysis implied no statistically significant differences in the strength of relation of stimuli-words and their associative fields between different age groups.

Linear regression analysis showed that in all four age groups, the average valence (pleasantness) of the associative fields can explain a significant proportion of variance in pleasantness of the stimuli-words: 86.3% ( $F(1, 38) = 238.98$ ,  $p<.001$ ) in the group of five-year-olds, 85.3% ( $F(1, 38) = 220.5$ ,  $p<.001$ ) in the group of nine-year-olds, 84.8% ( $F(1, 38) = 211.24$ ,  $p<.001$ ) in thirteen-year-olds and 87.7% ( $F(1, 38) = 269.89$ ,  $p<.001$ ) in group of seventeen-year-olds, respectively (Figure 2).

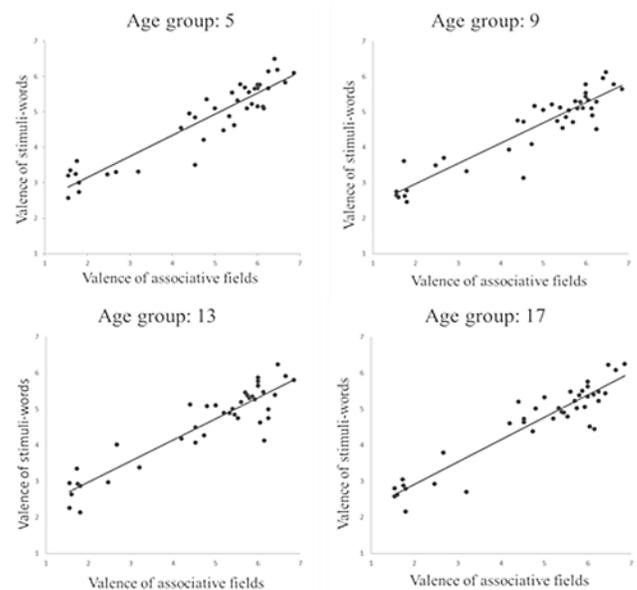


Figure 2: Relation between the valence of stimuli-words and their associative fields presented in scatter plots

## Discussion and Conclusions

The aim of this study was to analyze the developmental trajectory of the relation between affective valence of words and affective valence of their associative fields. Findings showed that valence of stimuli-words is strongly related to the valence of their associative fields in all four age groups. In other words, pleasant words have in their associative fields words that are also pleasant and unpleasant words are associated with concepts that are also unpleasant.

This finding is in line with suggestions of previous studies that valence is involved in the organization of associative fields of concepts in pre-school children in a very similar way as in adults. Also, it is in line with

dimensional theories of emotion, suggesting an early development of competence for valence processing and its stability during childhood and adolescence (McManis et al., 2001; Sabater et al., 2020).

Results of previous studies from other domains and sensory modalities suggested that this phenomenon goes beyond the domain of language. For example, Piecemeal-based evaluation theory (Fiske & Neuberg, 1990) suggested that attitudes are formed on the basis of the affective experience of individual characteristics that we attribute to a certain entity. Similarly, studies in visual domain showed that aesthetic experience of visual stimuli can be substantially explained by affective valence of meanings (associations) activated in the mind of the beholder when exposed to visual stimuli and that this phenomenon is stable through childhood, adolescence and adulthood (Janković, 2014).

In the following studies we will focus on other dimensions of connotative meaning of concepts (such as arousal, familiarity and abstractness) and their developmental trajectories.

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*PSYCHOLOGY OF ART*

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# Assessment of Affective Experience in Relation to Color and Familiarity of Stimulus

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## Abstract

Although the colors are an integral part of our daily life and carry a certain affective and symbolic meaning, it is not entirely clear how this meaning is formed. One of the more dominant theories that explains emotional reactions to colors by individual experience is Palmer's theory of ecological valence. According to this theory, positive or negative affective assessment is determined by the valence of previous experiences. The aim of this research is to determine the differences in the assessment of the affective experience of stimuli in relation to color and familiarity. The study involved 102 female subjects. Two factors were varied - stimulus familiarity (with two levels - known and abstract) and stimulus color (with four levels - red, green, yellow, blue). The connotative differential scale was used to assess the affective meaning. The results show that there is a main effect of familiarity and color on the assessment of affective meaning. A statistically significant interaction was also found between the varied factors.

**Keywords:** color; affective meaning; stimulus familiarity

## Introduction

We ascribe a particular meaning to every object that we can perceive with our senses. One of the sensory attributes that is often associated with affective meaning is color. Red is often associated with warmth, anger and excitement, green with relaxation, yellow with happiness, and blue with coldness and calm (Collier, 1996; Clarke & Costall, 2008; Hupka et al., 1997; Kaya & Epps, 2004; Oyama, 2003). However, it is not entirely clear what the mechanisms are for creating these associations. This relationship can be determined by basic sensory processes, evolution, socialization, but also personal experiences (Cuykendall & Hoffman, 2008; Palmer & Schloss, 2010). The evolutionary approach emphasizes that the objects and events necessary for survival are often associated with characteristic colors (blue with water, green with leaves, yellow with the sun). Such colors evoke emotions of pleasure. Early socialization explains the use and experience of color through gender stereotypes (Picariello, Greenberg, & Pillemer, 1990). One of the more dominant theories that explains emotional reactions to colors by individual experience is Palmer's theory of ecological valence. According to this theory, color preference arises from the average emotional reactions of people to color-related objects. Positive or negative affective assessment is determined by the valence of previous experiences, so some colors have "approach" signal, but sometimes they send an "avoid" signal. People are usually attracted to colors associated with salient objects that generally elicit positive affective reactions (Palmer & Schloss, 2010; Schloss, Hawthorne-Madell, & Palmer, 2015). We cannot have

personal experience with unknown stimuli, so the mechanism of creating the affective meaning of such stimuli is probably different.

This study examines the affective meaning of colors to stimuli that differ according to the degree of familiarity.

## Method

### Sample

The research was conducted on a sample of 102 subjects, students of the Faculty of Philosophy. All participants were female.

### Design and Procedure

Two factors were varied — *stimulus familiarity* (with two levels — known and abstract), unrepeatability by subjects, and *stimulus color* (with four levels — red, green, yellow, blue), repeated by subjects. The RGB color parameters were as follows: blue (0,76,248), green (0,173,51), yellow (255,247,0) and red (248,23,0). Stimuli were known and concrete objects such as cars and balls, and abstract stimuli in the form of closed contours that have no meaning. Stimuli were created using 3DPaint in Windows software. Each stimulus was displayed on the computer screen individually, with the respondents assessing their feelings according to the given stimulus. Examples of stimuli are shown in Figure 1.



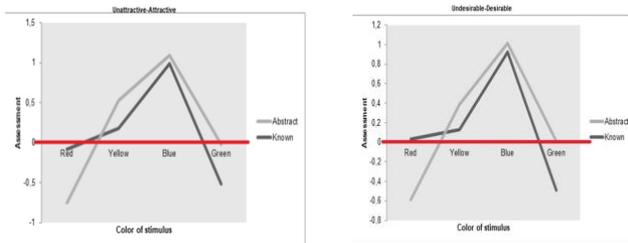
**Figure 1.** Examples of stimuli

To assess the affective meaning, a Scale of Connotative Differential was used, which refers to the emotional-evaluative factor (Janković, 2000) and contains five pairs of adjectives: unpleasant-pleasant, undesirable-desirable, hateful-nice, bad-good, unattractive-attractive. Respondents rated the intensity of their affective experience on a seven-point scale, -3 to 3, where "positive" adjectives were on the right and "negative" on the left.

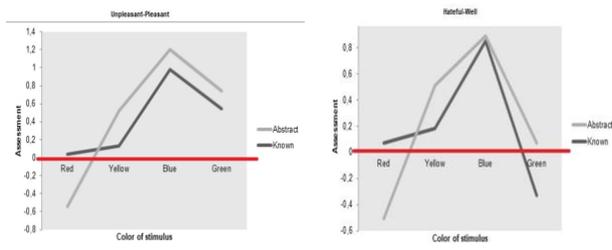
## Results

The results show that there is a main effect of familiarity ( $F(1,2738) = 9.22, p < .01, \eta^2 = .003$ ) and stimulus color ( $F$

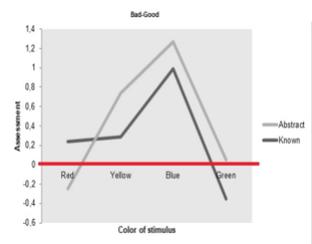
(3,2738) = 42.99,  $p < .001$ ,  $\eta^2 = .045$ ) on the assessment of affective meaning. A significant effect of both factors on individual adjective pairs was also found. There is a statistically significant interaction between varied factors ( $F(3,2738) = 32.47$ ,  $p < .001$ ,  $\eta^2 = .034$ ).



**Figure 2.** Assessments for two pairs of adjectives: *unpleasant-pleasant* and *undesirable-desirable*



**Figure 3.** Assessments for two pairs of adjectives: *unattractive-attractive* and *hateful-nice*



**Figure 4.** Assessments for pair of adjectives: *bad-good*

Scheffe post hoc analysis showed that assessments of affective meaning can be divided into three groups. For known stimuli, the lowest scores (directed towards the negative pole of the adjective) were obtained for green stimuli ( $M=-0.5$ ,  $SD=1.7$ ) on all adjective pairs followed by red ( $M=0.6$ ,  $SD=1.8$ ) and yellow stimuli ( $M=0.2$ ,  $SD=1.8$ ) on the positive side of the scale, within the mean values), while the highest scores (positive semi-adjectives) were obtained for blue stimuli ( $M=1.01$ ,  $SD=1.8$ ), ( $F(3,892)=24.560$ ,  $p < .001$ ). On the other hand, for abstract stimuli, the lowest (negative) estimates are obtained for red stimuli ( $M=-0.6$ ,  $SD=1.3$ ), the highest (positive) estimates for yellow stimuli

( $M=0.6$ ,  $SD=0.3$ ), while estimates directed towards the positive pole of the adjective, but within the mean values of the scale are obtained for blue ( $M=0.1$ ,  $SD=1.2$ ) and green stimuli ( $M=0.1$ ,  $SD=1.1$ ), ( $F(3,1846)=51.926$ ,  $p < .000$ ).

## Discussion and conclusion

Each visual stimulus that is perceived causes a subjective experience, which means that we attributed some personal and emotional characteristics to it. When color is added to that, the experience itself can be changed. Color can enhance or weaken the affective experience and this effect can be explained by Palmer's theory of ecological valence. People's emotional reaction is related to the aesthetic preference of colors, and people prefer certain colors if previous experiences with them have been positive. They are also repulsed by colors that connect them to objects that have negatively affected them (Palmer, Schloss, 2010). This research attempted to examine what is the affective meaning of stimuli of different colors with which we have no previous experience, as well as to what extent it differs from the meaning of known objects shown in the same colors. The results show a difference in the estimates of the affective meaning of stimuli depending on their color and whether they are known or unknown to us. A statistically significant interaction between color and familiarity in the assessment of affective significance was also obtained. The most valued known objects were the blue ones. This is consistent with previous research which has shown that blue color elicited a high number of positive emotional responses including feelings of relaxation, calmness, happiness or comfort (Kaya & Epps, 2004). It was also found that blue is the favorite color of adult subjects (Terwogt & Hoeksama, 1995). On the other hand, green objects are the most negatively evaluated, which is not completely surprising, because numerous studies have shown that green can evoke both positive and negative impressions (Davey, 1998; Mahnke, 1996; Saito, 1996). In the case of affective meaning of unknown stimuli, the results are completely different. Blue and green stimuli were assessed in the same way on the mean values of the scale. Yellow stimuli are most pleasing, while those in red are negatively rated. Mahnke and Mahnke (1993) found that people exposed to red color reported higher levels of anxiety than when they are exposed to blue or green. It is possible that red stimuli that cannot be associated with real objects, affect the way described by the authors and are therefore negatively evaluated.

The main conclusion of this study is that there is a difference in the affective assessment of known and unknown stimuli, which is in line with the postulates of the theory of ecological valence. Future research should also examine the effect of gender, but also additional colors, on these estimates.

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*PERCEPTION*

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# Target/Distractor Size Ratio And Illusory Contours Visual Search Efficiency

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## Abstract

Stimulus size is one of the basic features leading to search asymmetry in a visual search task: larger stimuli are being searched for more efficiently within the set of the smaller ones than vice versa. We conducted a series of experiments to study the search efficiency of illusory contours stimuli within the search asymmetry paradigm. In this paper we address one underlying question: can we apply the same target/distractor size ratio used in experiments with full contours stimuli to provoke the search asymmetry in visual search for illusory contours? The experiment was conducted using DMDX software. Two experiment variants were developed: in Variant 1 participants searched for a large illusory triangle in a set of small illusory triangles, while in Variant 2 they searched for a small illusory triangle in a set of large ones. The results reveal a significant size effect suggesting a similar mechanism of engaging visual attention in the visual processing of full and illusory contours stimuli.

**Keywords:** visual search, illusory contours, size ratio

## Introduction

Illusory contours are a class of visual stimuli with incomplete boundaries. When presented with these stimuli our visual system integrates object fragments and interpolates the missing edges, so we clearly perceive an object that has full boundaries. In the case of Kanizsa triangle (Figure 1), a stimulus used in this study, we see a bright white triangle although its contours are not physically present in stimulation and the brightness of the object and its background doesn't actually differ. (Kanizsa, 1955).

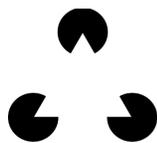


Figure 1: Kanizsa triangle.

Studies of illusory contours perception provide an insight into the role of visual attention in object perception. The prevalent paradigm for experimental studies of visual attention is the visual search task that involves searching for a target visual stimulus among distractor stimuli. Search asymmetry occurs if we need less time to find a target A in a set of distractors B than target B in a set of distractors A. Empirical studies have

revealed several basic visual features that lead to search asymmetries in visual search task - colour, size, orientation, curvature, motion etc (Foster & Ward, 1991; Royden, Wolfe & Klempen, 2001; Treisman & Gormican, 1988; Treisman & Souther, 1985).

We conducted a series of experiments to study the visual search for illusory contours of different sizes within the search asymmetry paradigm. Previous studies with full contours stimuli have shown that stimulus size is a basic visual feature that leads to search asymmetry: large stimulus is searched for faster among the small distractors than small stimulus among the large distractors (Treisman & Gormican, 1988). In this paper one particular empirical question is being addressed: will the same target/distractor size ratio used in experiments with full contours stimuli provoke the search asymmetry in visual search for illusory contours?

## Method

### Participants

Seventeen undergraduate students with normal or corrected to normal vision participated in the experiment. 10% response error rate was a cut-off point for excluding a participant from a sample. One of them reached this criterion, so these responses were not included in further statistical analysis.

### Design and procedure

The experiment was run on a PC using DMDX software to present stimuli and collect reaction times. Stimuli were displayed on a screen 373 × 300 mm large with a resolution of 1280 × 1024 pixels. A chin rest was used to control head movements and to assure that the head-screen distance was the same for all the participants. The distance between the chin rest and the screen was set to 57cm, so one degree of visual angle corresponded to 1cm of stimulus dimensions displayed on the screen.

The stimulus set consisted of Kanizsa triangles of two different sizes, large ones with the side of the triangle 2.3 cm long and small ones with the side of the triangle 1.4 cm long. The size ratio of target and distractor stimuli was based on previous studies of visual search for full contours stimuli (Treisman & Gelade, 1980; Treisman & Gormican, 1988; Wolf, 1998).

The experiment had two variants, in Variant 1 participants searched for a large illusory triangle in a set of small illusory

triangles, while in Variant 2 they searched for a small illusory triangle in a set of large ones.

The experimental procedure began with a fixation point held in a center of the screen for 1000 ms. Afterwards, a set of stimuli appeared on the screen. Participants had up to 1500 ms to search the set for the target before the set disappeared, followed again by fixation point and next stimulus set (Figure 2). The response was made by pressing the right mouse button if the target was present in the set (positive sets) or the left button if there was no target in the set (negative sets). The time lapsed between set exposure and participant response was measured in ms as visual search time (RT).

At the beginning of the experiment, participants were introduced to visual search task, stimuli and response procedure and then went through a trial consisting of 12 stimulus sets randomly selected from the experiment session.

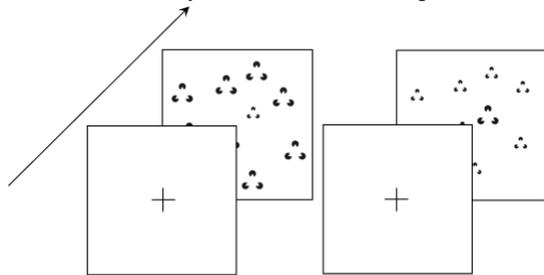


Figure 2: Target, distractors and experimental procedure.

There were three factors in experiment design: 1. stimulus size (large/small illusory triangles) - the size effect was tested in two separate variants of the experiment: in Variant 1 the task was to search for the small illusory triangle among the big ones, while in Variant 2 the task was to search for the large illusory triangle among the small ones; 2. set type: half of the sets were positive, the other half were negative; the order of positive and negative sets was randomized; 3. set size: sets could have either 3/6/9/12 distractors and different set sizes randomly alternated thought the session.

Since 30 trials were displayed at every factor level ( $2 \times 4$ ), it resulted in 240 trials in total in each variant of the experiment. RT (visual search time) was measured at each factor level. Each participant went through both variants of the experiment, in separate sessions, with the order counterbalanced across the participants.

## Results

Search asymmetry was tested through regression analysis (RT  $\times$  set size) and t-test of search slopes for Variant 1 and Variant 2 of the experiment. This statistical approach to search asymmetry has already been used in previous studies of visual search (Li, Cave & Wolfe, 2008).

The slope of the linear regression reflects search efficiency for each of the two variants of the experiment. T-test shows significant differences between slopes for Variant 1 (3.41 ms/item) and Variant 2 (1.08 ms/item),  $t(15) = 3.08$ ,  $p = .008$  (Figure 3).

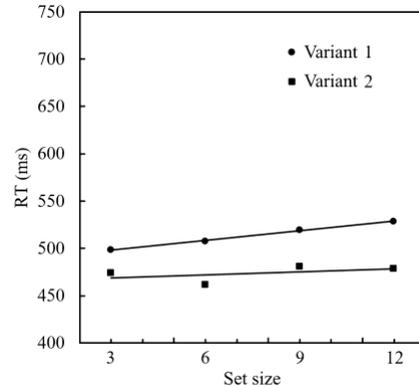


Figure 3: Search asymmetry: regression slopes for RT  $\times$  set size, Variant 1 and Variant 2.

Search for large illusory triangle among small illusory triangles is more efficient ( $M=1.08$ ,  $SD=1.85$ ) than search for small illusory triangles among large illusory triangles ( $M=3.41$ ,  $SD=2.90$ ).

## Discussion

The results confirm that target/distractor size difference applied from experiments with full contours stimuli leads to a significant effect on search efficiency of illusory contours. This effect is embodied in search asymmetry of two variants of the experiment and it reflects the same trend found in experiments with full contours stimuli: we need less time to find large stimuli among small ones than to find small stimuli among large ones.

The fact that visual search for full and illusory contours shares the sensitivity to the particular size difference of target and distractor stimuli suggests the same nature of the perceptual processes behind the visual search for these two types of stimulation and potentially similar mechanism of engaging visual attention in their visual processing.

This finding is further supported by insights from other experiments that were part of our broader study of visual search of illusory contours in search asymmetry paradigm which will be addressed in more detail in the following papers.

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*SOCIAL PSYCHOLOGY*

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# Content Analysis of Newspaper Headlines Related to the Coronavirus Epidemic in the Period Before and After the 2020 Parliamentary Elections in Serbia

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## Abstract

The media is a powerful tool in shaping people's perceptions and behaviours in a crisis, such as the coronavirus pandemic. The way messages about the crisis are framed can serve specific political goals – in this case, to portray the institutions as competent in combating the crisis and to hold elections without people fearing the possibility of getting infected – by presenting the pandemic as less dire than it actually was. We investigated whether the coronavirus epidemic was treated differently in the Serbian media before and after the parliamentary elections in June 2020. We analyzed the content of headlines of the seven most circulated newspapers two weeks prior and two weeks after the elections. As expected, pandemic-related headlines were less frequent before than after the elections. Among those, fear-inducing headlines followed the same pattern, while we did not observe a change in inducing hope in relation to the elections. Headlines contained little factual information and were largely reduced to sensationalist intimidation or mere consolation. Our design did not allow us to conclude whether the observed trends were due solely to the strategic goals or also due to the actual severity of the pandemic.

**Keywords:** coronavirus pandemic, newspaper headlines, fear, hope

## Introduction

The media is a powerful tool in shaping peoples' everyday behavior, and especially behavior in crises (Karasneh et al., 2020; Sandell et al., 2013). Depending on the sender's goal, messages can be shaped or framed in different ways. The way in which messages are framed has an effect on how the recipient interprets the message and how they act upon it. Framing effect is considered to be a cognitive bias because an individual's choice is influenced by the presentation of otherwise logically equivalent information (Plous, 1993). In

media psychology, this type of framing is called equivalence framing, while in a broader sense it can refer to the angle taken when presenting a particular topic, called emphasis framing (D'Angelo, 2017).

To gain readership, media often opt for a sensationalist emphasis framing, i.e. they appeal to emotions, most typically fear, astonishment and shock (Frye, 2005; Giles & Shawn, 2009). While the global media framed pandemic-related news most frequently in a fear-inducing manner (Ogbodo et al., 2020), we expected the Serbian media to report differently about it before and after the elections, following a particular political agenda – to justify holding the elections by presenting the pandemic as less dire than it actually was.

Parliamentary elections in Serbia were held on June 21, 2020. The coronavirus pandemic made providing safe elections especially challenging. Thus, we analyzed the frequency of pandemic-related news and their content related to the election date. We expected pandemic related headlines to be more frequent after than before the elections (H1); amongst them, fear-inducing headlines would follow the same trend (H2), while hope-inducing ones would be less frequent after than prior to the elections (H3).

## Method

For the content analysis, we targeted the seven newspapers with the largest circulation in Serbia – Blic, Večernje Novosti, Kurir, Informer, Politika, Alo and 24 Časa – published from June 7 to July 5 (two weeks both before and after the elections, excluding the election day). Next, we sampled the main headline from each front page, which

amounted to a total of 196 headlines. Digests below the headlines provided the explanatory context for the analysis.

### Coding scheme

To test our hypotheses, we devised a coding scheme consisting of four following variables:

1. Content – with categories coronavirus-related (every mention of the coronavirus, whether in the context of direct reporting about the epidemic or in the context of various virus-related topics) and not coronavirus-related.

2. Time period – before the elections or after the elections.

3. Hope-giving – with two categories, attempt to give hope or no attempt to give hope. If a headline was categorized as hope-giving, it was further assessed whether it provided solutions (eg. *Vaccines already in development, human trials have started*) to pandemic-related issues or mere consolation (comforting but not directive eg. *Serbia is the safest country*).

4. Fear-inducing – with two categories, presence of intimidation or absence of intimidation. If a headline was categorized as intimidating, it was further assessed whether it relied on direct intimidation (explicitly mentioning the virus, the epidemic, the number of infected, the spread of the virus etc. all in a sensationalist frame eg. *Corona hell! The young can get infected!*) or indirect intimidation (the effects of the pandemic on functioning of the state, as well as on the quality of life eg. *LOCKDOWN, gatherings will be banned!*).

Two independent raters categorized the headlines by this coding scheme; the inter-rater agreement was high (Krippendorff's alpha=0.906).

### Results

Out of 196 headlines, a total of 68 mentioned the coronavirus epidemic. As hypothesized (H1) we observed concordance of time period and the presence of coronavirus ( $r = .343$ ;  $\chi^2_{(67)} = 23.059$ ;  $p < .001$ ). The share of headlines dedicated to coronavirus after the election was higher than before them (Table 1).

Table 1

*Frequency of pandemic related headlines relative to the election*

Further, as expected, we observed concordance between the period the titles were published and the frequency of fear-

	Coronavirus-related	Not coronavirus-related	Total
Before the election	18	80	98
After the election	50	48	98
Total	68	128	196

inducing headlines ( $r = .324$ ;  $\chi^2_{(67)} = 7.145$ ;  $p = .007$ ). Namely, fear was more frequently induced in the printed media headlines after the election than before them (Table 2).

Out of those, there were 35 cases of what we labeled direct intimidation and nine cases of indirect intimidation.

Table 2

*Frequency of fear-inducing pandemic related headlines relative to the election*

	Presence of intimidation	Absence of intimidation	Total
Before the election	7	11	18
After the election	37	13	50
Total	44	24	68

As detailed in Table 3, and contrary to H3, we did not observe change in frequency of hope-inducing headlines relative to the election. Out of all hope-inducing headlines, six provided solutions whilst 12 offered mere consolation ( $r = .058$ ;  $\chi^2_{(67)} = 0.227$ ;  $p = .640$ ).

Table 3

*Frequency of hope-giving pandemic related headlines relative to the election*

	Attempt to give hope	No attempt to give hope	Total
Before the election	4	14	18
After the election	14	36	50
Total	18	50	68

The headlines themselves contained relatively little concrete, factual information, and are largely reduced to either sensationalist intimidation or mere consolation. This way of reporting on the epidemic has been criticized by the WHO as an ineffective means of informing the public in a responsible and efficient way about the course and possible consequences of the epidemic, as well as the recommended safety precautions.

### Discussion and conclusion

Regarding the presence of the pandemic in the media, we observed a robust trend related to the elections: it was more frequent after than before the elections. This fact alone could have helped to reassure the public (before) or to create a climate of fear (after). One can further speculate that this was due to the authorities' goal to ensure the highest possible turnout by presenting the situation as less dire than it actually was. An alternative explanation is that the change in the frequency of coronavirus-related headlines was at least partially caused by the fact that the official number of infected people rose sharply after the elections, (Institute of

Public Health of Serbia "Milan Jovanovic Batut", 2020). Thus, future research should broaden the time period in which headlines are analyzed, to track trends in reporting independent of the elections.

In the same vein, our content analysis revealed more frequent fear-inducing headlines after than before the elections, but no difference in frequency in hope-inducing ones. It seems that public opinion before the election was mostly shaped by omitting the pandemic-related information, rather than by presenting it in an optimistic manner. In fact, the period after the election coincided with new scientific discoveries and medical breakthroughs, which led to a slight increase in the number of headlines expressing hope.

Our design allowed us to further disentangle the type of emotions strategically elicited by newspaper headlines. A significant portion of fear-inducing ones were strongly emotionally charged. This is sometimes interpreted as a tactic to ensure compliance with safety measures (Stolow et al., 2020). Although there is a meta-analysis supporting the relation between intimidating media headlines and public compliance (Witte & Allen, 2000), there is also evidence that this type of reporting could have numerous negative consequences (anxiety, panic, aggression, etc.) (Kok et al., 2017). In addition, even among the hope-inducing headlines, the ones offering concrete solutions relying on scientific facts were relatively rare, in spite of the WHO's recommendations (Stolow et al., 2020) and warnings that it might lead to a widespread feeling of helplessness.

Content analysis of media reporting in the time of crisis proved as a useful tool to uncover patterns that can have an immense impact on the public climate and ultimately the public's willingness to comply with recommended health measures.

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# Emotional Climate among Prisoners and Prison Officers

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## Abstract

Emotional climate refers to predominant and relatively stable collective emotions generated through the social interaction of a social group's members in a particular milieu. This study aims to compare how prisoners and prison officers perceive the feelings of their group members in the situation constructed by the same organisation – prison. Data were collected on a convenience sample of prisoners and prison officers in Croatia. The Emotional Climate Scale assessed the perception of the emotional climate. While there was a statistically significant effect of status (prisoner vs prison officers) on dimensions of emotional climate, the main effects of gender and time spent in prison/ service and those variables' interactions were not significant. Prisoners perceived more negative and less positive emotions and more negative emotional balance in their group than prison officers. Generally, both prisoners and prison officers perceived the emotional climate in their groups as more negative than positive. The promotion of a positive emotional climate is needed for adaptive coping within a prison, psychological well-being, and resilience among prisoners and prison officers.

**Keywords:** emotional climate; emotional balance; well-being; prisoners; prison officers

## Introduction

Emotional climate refers to predominant and relatively stable collective emotions generated through the social interaction of a social group's members in a particular milieu (De Rivera & Páez, 2007). To date, prisons have become established as highly emotional places (Garrihy & Watters, 2020). In prisons, emotions are usually negative (Walby & Cole, 2019), gendered and performative (Crawley, 2004b; Crewe, 2009). In addition, interpersonal relations and experiences within prison pose high (emotional) demands on both prisoners and prison officers, which is evident through the myriad of personal, collective and institutional aversive consequences (Crawley, 2004a; Liebling, 2008; Garrihy, 2019; Weinrath, 2017). Analysis of experienced emotions helps us understand and modify social contexts (Fisher, 1989) and individuals' and social groups' behavioural orientation (Tran, 2004) positively.

## Current research

The study aims to compare how prisoners and prison officers perceive the feelings of their group members in the situation constructed by the same organisation – prison, to capture the diversity and distribution of emotions. Due to the differences in experiences, status, and power, it was assumed that prison officers and prisoners experience different emotional climates and that prisoners will experience emotional climate

within the prison as more negative than prison officers (Ruiz, 2007).

Gender differences in emotional climate could be expected since women are more likely to experience inner- (e.g., depression) as well as outer-directed emotions (anger) (Jang, 2007). In addition, the initial stages of the sentence are considered the most stressful (Liebling & Ludlow, 2016), and organisational socialisation is the most intense when an employee joins an organisation (Harikkala-Laihininen, 2020). Thus, the time in prison/ service and gendered comparison were considered in this study.

## Method

### Participants

Data were collected on a convenience sample of prisoners and prison officers in Croatia (Table 1).

Table 1: Sample socio-demographic characteristics

Status	Gender	Time in prison/ service (years)			$\Sigma$
		< 5	5 - 10	> 10	
Prisoners	Male	470	94	20	584
	Female	27	5	0	32
	$\Sigma$	497	99	20	616
Prison officers	Male	49	51	247	347
	Female	90	55	162	307
	$\Sigma$	139	106	409	654
	$\Sigma$	636	205	429	1270

### Procedure

Paper-pencil questionnaires were administered among prisoners and prison officers in all jails and prisons in Croatia. Participants voluntary and anonymously self-assessed the frequency of experiencing different emotions by the members of their group. Research was approved by the institutional ethical committee (No. approval 11-73/17-326).

### Measurements

Emotional Climate Scale (Páez, et al., 1997; Páez, Basabe, Ubillos, & González-Castro, 2007) provides the measurement of negative emotional climate ( $M(\Sigma$ negative emotions)), positive emotional climate ( $M(\Sigma$ positive emotions)) and climate balance (Positive climate –  $M$ negative climate). Frequency of experiencing specific emotions by the members of own group was assessed on a 5-point Likert scale (1 = never, 5 = frequently). The subscales on both samples showed satisfactory reliability (Table 2).

Table 2: ECS subscales' reliability.

Measures	Prisoners	Prison officers
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	$\alpha$	$r$	$\alpha$	$r$
Positive emotional climate	.70	-.15	.86	-.59
Negative emotional climate	.82		.88	

In addition to emotional climate data on respondents' gender and time served in prison / time spent in service, indicated in years, were collected.

## Results

While there was a statistically significant effect of status (prisoner vs prison officers) on dimensions of positive and negative emotional climate and emotional balance, effects of gender and time spent in prison/ service and interaction of status, gender and time in prison/ service were not significant (Table 3).

Table 3: (M)ANOVA results' summary.

Factors	MANOVA for the positive and negative emotional climate			univariate ANOVA for emotional balance		
	$F$ (Wilk's $\lambda = .99$ )	$df$	$\eta^2$	$F$	$df$	$\eta^2$
Status	3.97*	2, 1223	.006	7.26**	1,1234	.006
Gender	.34	2,1223	.001	.04	1,1234	.000
Time	.86	4,2446	.001	.28	2,1233	.000
Status x Gender	1.02	2,1223	.002	.19	1,1234	.000
Status x Time	.25	4,2446	.000	.11	2,1233	.000
Gender x Time	.36	4,2446	.001	.69	2,1233	.001
Status x Gender x Time	1.64	2,1223	.003	2.29	1,1234	.002

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

Prisoners perceived more negative and less positive emotions in their group than prison officers. While both prisoners and prison officers perceived the emotional climate in their groups as more negative than positive, a more negative emotional balance was observed among prisoners than prison officers (Table 4).

Table 4: Means, Standard Deviations, and One-Way ANOVA.

Emotional climate	Prisoners		Prison officers		$F(1,1329)$
	$M$	$SD$	$M$	$SD$	
Positive	2.53	0.71	2.68	0.76	14.65**
Negative	3.35	0.85	3.09	0.86	29.09**
Balance	-0.82	1.19	-0.41	1.44	31.52**

\*\* $p < .001$ ; \* $p < .005$

Among positive emotions (Figure 1), hope was perceived as the most prominent among prisoners and contentedness among prison officers. Conversely, happiness was the least present among prisoners and trust in the prison system among prison officers.

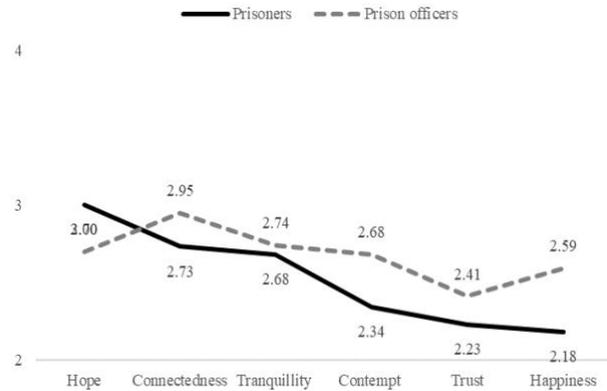


Figure 1: Positive emotions.

Among negative emotions (Figure 2), sadness was perceived as the most frequently present among prisoners, and anger among prison officers. The least present negative emotion among both groups was fear.

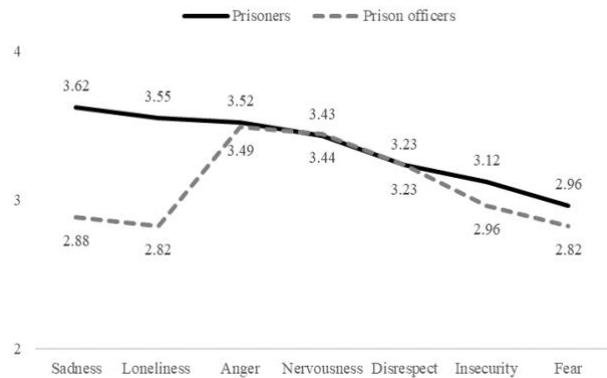


Figure 2: Negative emotions.

## Discussion

In line with previous research (e.g., Ruiz, 2007), positive emotions were relatively absent from prison life.

Generally, experiences of externalising emotions such as anger, and internalising emotions, such as feelings of depression (sad, lonely) and anxiety (worried, tense, fearful), are common among prisoners (Joon Jang, 2020). In this study, the predominant climate among prisoners was of sadness and loneliness (see Ruiz, 2007). Those emotions are usually a consequence of loss, leading to withdrawing and avoiding actions (Techio et al., 2011).

A negative emotional climate and negative emotional balance observed among employees were also expected. Prison officers' work demands extensive emotional labour (managing feelings in line with the job's requirements) and emotional work (managing other people's emotions) (Crawley, 2011; Hochschild, 1983). It is emotionally demanding and draining (Crawley, 2011), which is evident through experienced stress/ burnout (Finney et al., 2013), desensitisation, emotion spill-over into family life, and stigmatisation related to prison work (Crawley, 2004a; Garrihy, 2019).

Perception of more negative emotional climate among prisoners than employees could be traced to prisons' organisational structure and the conditions of confinement (Paulus & Dzindolet, 1993), to the prison culture (Ruiz, 2007), exposure to trauma and victimisation (Ruiz, 2004), but also a sense of self and purpose in life, the passage of time and prospects for the future (Crewe, Hulley, & Wright, 2017). However, the effects of difference in (legal) status and power, as well as the loss of freedom are the main reasons for obtained difference in emotional climate between prisoners and prison officers (Ruiz, 2007).

Although expected, the effects of gender and time spent in prison/ service on emotional climate were not significant (Crewe, Hulley, & Wright, 2017; Laws, 2018; Yurtsever, & De Rivera, 2010). Insignificant effects could be attributed to sample structure - dominance of males, offenders serving shorter sentences, and experienced employees. Also, the effects of those variables are often mediated and/or moderated by sentence length (Rabe, 2012; Ruiz, 2007), index offence (Duthé, Hazard, Kensey, & Shon, 2013), and age (Ruiz, 2007).

Generally, negative feelings have been associated with defensive and protective behaviour (fear - Skitka, Bauman, & Mullen, 2004), withdrawal, self-harm and avoidance (sadness - Lykes, Beristain, & Cabrera, 2007), activation protest, and reinforcement and justification of aggression and retaliation (anger - Tran, 2004). Contrary, positive collective climates lead to adaptive forms of coping, resilience (Conejero and Etxebarria 2007; Páez et al. 2007), cooperation, better performance, work satisfaction, lower burnout, and organisational identification (Fischer & Manstead, 2008; Geue, 2018). Thus, assessment of emotional climate could help us understand the social contexts (Fisher, 1989) to predict individual and group behaviour orientation (De Rivera, & Páez, 2007; Joon Jang, 2020; Tran, 2004) to achieve positive personal and organisational transformations.

Prison climate can affect the prisoners and employees' well-being through various mechanisms, and prisoners' dispositional characteristics can be mediated by the quality of the environment (Heynen, et al., 2017). Consequently, more positive emotional climate within prisons could be promoted by improvements in organizational and physical characteristics of the prisons (e.g., possibilities to spend more time out-of-cell, to work outside of prison, ability to self-cater, variations in facilities for contact with the outside world, better quality of in-prison activities), securing safety

and fair treatment by staff (e.g., enforcing the rules in consistent, fair, and humane manner) (see van Ginneken et al. 2019), and providing prisoners with support and possibilities of personal growth through various programs (Heynen, et al., 2017).

## Conclusion

Prison officers perceived more positive and less negative emotions in their group than the prisoners did, but both groups dominated negative emotions. Therefore, the positive emotional climate that fosters hope and trust should be encouraged to promote adaptive coping, social support, and altruistic behaviour, enhance resilience among prisoners and prison officers, and suppress self-harm, aggression, retaliation, and protest.

## Acknowledgements

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# Determinants of Self-Reported Depressive Affect in Serbia: Results from a Nationally Representative Sample

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## Abstract

Although depression is ranked as the single largest contributor to global disability and the major contributor to suicide deaths, with a globally rising prevalence, analyses of determinants of depression in Serbia on a nationally representative samples are scarce. Our aim is to fill this gap. We used a merged Serbian sample within the European Quality of Life Survey (EQLS) from 2012 and 2016, consisted of 2058 respondents. In EQLS, depressive affect is measured by respondent's self-assessment of how much they felt downhearted and depressed during the previous two weeks. Answers are given on a six-point single-item scale. Our selected independent variables collectively explained about 38% of the variance in depressive affect. Perceived social exclusion is shown to be the most important determinant in our model. Subjective health, satisfaction with family life, and feeling worthwhile come next. Other significant determinants are attending religious services, being female, feeling free to decide how to live, being retired, and being widowed. Age, size of locality, having time to do the enjoyable things, being divorced, being unemployed, being unable to work due to illness or disability, satisfaction with standard of living, trust in people, and taking part in sports or physical exercise are shown to be not significant determinants.

**Keywords:** depressive affect, Serbia, European Quality of Life Survey

## Introduction

Considerable social difficulties during recent decades (such as wars, economic recessions, internal and external migrations, deindustrialization and unemployment, and rising inequalities) have left a significant effect on the mental disabilities of the Serbian population, with depressive disorders among the first (Purebl et al., 2015). Although depression is ranked as the single most significant contributor to global disability and the major contributor to suicide deaths, with a globally rising prevalence (Institute of Health Metrics and Evaluation (2021), analysis of determinants of depression in Serbia on a nationally representative sample is non-existent. The exception is one analysis of socioeconomic determinants (Šantrić Miličević et al., 2016). In other countries, the examinations of such predictor structures on nationally representative samples are also neglected so far. Finally, previous studies have mainly investigated individual correlates of depression, neglecting its comprehensive predictor structure, or limited analysis to certain segments of the population. Our aim is to fill this gap.

## Method

We used a merged Serbian sample within the European Quality of Life Survey (EQLS) from 2012 and 2016, consisting of 2058 respondents (51.9% of females,  $M_{age} = 48.37$ ,  $SD_{age} = 17.58$ ). In EQLS, depressive affect is measured by respondent's self-assessment of how much they felt downhearted and depressed during the previous two weeks. Answers are given on a six-point single-item scale (1 – all the time, 6 – at no time), which we reversed. Although this represents an important limitation, the EQLS database does not provide any other method for measuring depressive affect. We selected eighteen independent variables and a total sample of 1856 respondents (with no missing values for any of them).

Along sociodemographic variables, these are: satisfaction with standard of living and satisfaction with family life (1 – very dissatisfied, 10 – very satisfied), subjective health (1 – very good, 5 – very bad), (interpersonal) trust (1 – you can't be too careful, 10 – most people can be trusted), feeling worthwhile and feeling free (to decide how to live) (1 – strongly agree, 5 – strongly disagree), having time (to do the really enjoyable things) (1 – strongly disagree, 5 – strongly agree), religious (services attending, apart from weddings, funerals or christenings and (taking part in sports or physical) exercise (1 – every day or almost every day, 5 – never), size of locality (1 – the open countryside, 4 – a city or city suburb), and perceived social exclusion index (four items – I feel left out of society; life has become so complicated today that I almost can't find my way; I feel that the value of what I do is not recognized by others; some people look down on me because of my job situation or income) (1 – lowest, 5 – highest; Cronbach's Alpha = .809).

## Results

Almost 3% of the population in Serbia report depressive affect all of the time, approximately 5% most of the time, one-tenth more than half of the time, 15% less than half of the time, and about one-third of each some of the time and at no time. To explore the most significant predictors, we carried out a multiple regression analysis using the enter method. Our results are shown in Table 1.

Table 1. Results of regression analysis with depressive affect as the dependent variable

	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>
(Constant)	1.498	.260	–	5.765	.000
Female	.200	.050	.077	3.969	.000
Age	.000	.002	.006	.193	.847
Satisfaction with standard of living	.005	.011	.009	.418	.676
Satisfaction with family life	-.121	.012	-.205	-9.847	.000
Subjective health	.268	.030	.233	9.053	.000
Trust	.009	.010	.017	.866	.386
Social exclusion	.414	.032	.289	12.898	.000
Feeling worthwhile	.129	.033	.087	3.949	.000
Feeling free	.090	.027	.073	3.379	.001
Having time	-.038	.022	-.033	-1.735	.083
Religious	-.116	.027	-.080	-4.250	.000
Exercise	-.022	.022	-.022	-.966	.334
Unemployed	.078	.066	.024	1.177	.239
Unable to work	-.556	.367	-.028	-1.516	.130
Retired	-.188	.083	-.065	-2.274	.023
Widowed	.267	.114	.046	2.329	.020
Divorced	-.210	.253	-.015	-.831	.406
Size of locality	-.060	.032	-.035	-1.855	.064

Our selected independent variables collectively explained about 38% of the variance in depressive affect,  $F(18, 1837) = 63.012$ ,  $p < .001$ ,  $R^2 = .382$ . Perceived social exclusion is shown to be the most important determinant in our model ( $\beta = .289$ ,  $t = 12.898$ ,  $p < .001$ ). Subjective health ( $\beta = -.233$ ,  $t = -9.053$ ,  $p < .001$ ), satisfaction with family life ( $\beta = -.205$ ,  $t = -9.847$ ,  $p < .001$ ), and feeling worthwhile ( $\beta = -.087$ ,  $t = -3.949$ ,  $p < .001$ ) come next. Other significant determinants are attending religious services ( $\beta = -.080$ ,  $t = -4.250$ ,  $p < .001$ ), being female ( $\beta = .077$ ,  $t = 3.969$ ,  $p < .001$ ), feeling free to decide how to live ( $\beta = -.073$ ,  $t = -3.379$ ,  $p < 0.01$ ), being retired ( $\beta = .065$ ,  $t = 2.274$ ,  $p < .05$ ), and being widowed ( $\beta = .046$ ,  $t = 2.349$ ,  $p < .05$ ). Age, size of locality, having time to do the enjoyable things, being divorced, being unemployed, being unable to work due to illness or disability, satisfaction with standard of living, trust in people, and taking part in sports or physical exercise are shown to be not significant determinants.

## Discussion

In this study, we examined the determinants of depression in Serbia using a nationally representative sample from the European Quality of Life Survey. Our results indicate that approximately 8% of the population feels downhearted and

depressed all of the time or most of the time. Similarly, according the European Health Interview Survey report (Milić et al., 2019), 4.3% of the population in Serbia reported to be suffering from depression; also, chronic depression or anxiety was reported by 4.9% of the respondents in Serbia (Šantrić Milićević et al., 2016), and in both studies significantly more among females.

Further, perceived social exclusion, subjective health, satisfaction with family life, and feeling worthwhile are shown to be the most significant determinants of depressive affect. The crucial effects of these variables are also indicated many times in prior research (Schnettler et al. 2019; Hybels et al., 2012; Targosz et al., 2003; Colman et al., 2011).

Our results highlighted the importance of non-material domains of life on depressive affect. This finding is consistent with previous research, first, indicating a strong relationship between affective well-being and non-material domains of life indicators, and second, indicating a stronger affective well-being relation with non-material domains of life in comparison to material ones (Kahneman and Deaton, 2010). Such finding is also consistent with our results given that satisfaction with standard of living, and being unemployed and unable to work are non-significant determinants of depressive affect. Finally, these results are also consistent with the ones already found on a nationally representative Serbian sample: compared to material ones, non-material well-being indicators like social connections and subjective health are more related to affective well-being (Vladislavljević and Mentus, 2019).

Using a single-item scale to measure depressive affect within the EQLS presents a limitation of our study. Future studies would be interesting to examine the long-term trends of mental well-being in Serbia, and compare these trends with ones from the regional countries, which will be possible through its further participation in the EQLS.

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# The effects of framing of descriptive norms on donating behavior

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## Abstract

In persuading people to behave prosocially (volunteer or donate material resources), charities often resort to two strategies - framing and referring to descriptive norms. In a single design, we contrasted the effects of message framing of descriptive norms on people's willingness to donate bottle caps. We put a sign with a positively or negatively framed message containing descriptive norms (An average Serbian household saves/throws away at least five caps of daily products. Save the caps!/Don't throw the caps away!) in four Belgrade buildings and observed the numbers of caps donated for five days. As hypothesized, more bottle caps were collected when the message was formulated in a negative ( $f=487$ ) than in a positive ( $f=161$ ) frame ( $\chi^2=164.006$ ,  $df=1$ ,  $p<.001$ ). This also means that the descriptive norm contained in the negative frame did not decrease donating. The results can inform the campaigns aiming to encourage prosocial behaviour.

**Keywords:** donating behaviour, framing effect, descriptive norms

## Introduction

Donating behaviour can be defined as helping less fortunate individuals or social groups, either directly or through charities. When considering this behaviour strictly in the context of charity organisations, it is mainly manifested through volunteer work or the provision of monetary or symbolic support (Lee & Chang, 2007). Although the collection of contributions is taken to be the backbone of the work of charities, it often comes across as a difficult task (Lee & Chang, 2007; Das, Kerkhof & Kuiper, 2008; Cao, 2016). This results in a large number of organizations withdrawing or reducing their services, even though the number of people in need does not decrease. Therefore, it is extremely important to determine the most efficient ways of communicating with the public and potential new donors. In attempt to encourage people to donate, three strategies have proven to be effective. The first one, framing, suggests that messages which emphasize the negative consequences of not-donating are more successful in encouraging donation behaviour than the ones which emphasize the positive consequences of donating (Cao, 2016). The second strategy, referencing to descriptive norms, suggests that messages that point out that other people donate are more successful in

encouraging this behaviour than those that point out that others do not donate (Smith & McSweeney, 2007). And the third shows that messages that use statistical information are more effective than those that don't. These strategies have been examined separately in previous research. Bearing in mind that there is not a large amount of research on this topic, and the fact that fundraising within various charities often shows a decreasing trend, we wanted to contrast and examine the effects of these strategies in a unique design while continually following donation behaviour in an ecologically valid environment in real-time. Thereby, the aim of our study was to examine the effects of positively and negatively framed slogans which contained descriptive norms on people's tendency to participate in charity actions.

## Method

The charity considered in this research was "*Cap for handicap*", a non-profit organisation which sells caps collected by voluntary citizens to plastic-recycling companies in order to buy orthopaedic aids for people with disabilities. The slogan which was supposed to encourage respondents to donate the caps contained three pieces of information: (1) a descriptive norm, (2) statistical datum and (3) frame type ("*An average Serbian household keeps/throws away at least five caps of daily products. Keep the caps!/Don't throw the caps away!*"). The research was conducted during five work days at four different locations on the territory of Belgrade. Four identical boxes were placed at the entrance hallways of four different residential buildings (which approximately had an equal number of apartments (16 to 18)) along with the accompanying slogans, two with a positive and two with a negative frame. The number of bottle caps was recorded every 24 hours. Although the negatively framed slogans contain a descriptive norm that could lead people not to donate (by encouraging them to act in the same way), we hypothesized that the number of the collected caps would be greater when using the negatively framed slogan rather than the positive, since they encourage thinking about the negative outcome of not-donating that can cause a sense of guilt, which can become a source of intrinsic motivation

for donation behaviour in order to suppress negative feelings (Chang, 2007).

## Results

The frequency of bottle caps collected after each day, as well as the cumulative frequencies of bottle caps collected in the case of positively ( $f_1 = 161$ ) and negatively framed ( $f_2 = 487$ ) slogans can be seen in Table 1.

Table 1. Frequency of collected caps depending on the type of framed message

		Frequencies	Cumulative
<b>Positive frame</b>			
1.	day	64	64
2.	day	11	75
3.	day	15	90
4.	day	15	105
5.	day	56	161
<b>TOTAL</b>		<b>161</b>	
<b>Negative frame</b>			
		Frequencies	Cumulative
1.	day	154	154
2.	day	101	225
3.	day	91	346
4.	day	77	423
5.	day	65	487
<b>TOTAL</b>		<b>487</b>	

The results suggest that there is statistically significant difference between the number of collected bottle caps depending on the frame type ( $\chi^2=164.006$ ,  $df=1$ ,  $p<.001$ ,  $w=0.503$ ). The number of collected caps appeared to be higher when using a negatively framed message instead of positively framed one.

## Discussion and conclusion

The results suggest that the negatively framed slogans have a greater effect on donating behaviour compared to the positive ones, which is correspondent to our hypothesis. As mentioned earlier, this can be explained by the fact that the negative framework emphasizes the negative consequences of not donating (O'Keefe & Jensen, 2006), which can further lead to unpleasant emotions that are inhibited by donating (Chang, 2007). However, it should be noted that the different outcome could have been expected as well. Since the descriptive norm implemented in the negatively framed slogan technically informed the public that the majority decides not to participate in the humanitarian action, meaning that the vast number of people throws away the caps, it could have encouraged people to behave in the same way. Nevertheless, it appears that people are more driven to donate when being put up with the negatively framed slogan regardless of the potential effect of the

descriptive norm. The future research should focus on constructing and then comparing positively and negatively framed slogans that contain the norm with the ones that don't, in order to distinguish the effects of these factors. Moreover, since most of the caps were collected during the first day, it can be presumed that some of the residents had already been collecting the caps, meaning that they were already prone to donation behaviour, regardless of the effect of framing strategy. Therefore, the observation period in the future research should be extended, and an implementation of the control situation without framed slogans should be taken into an account. Finally, since our research was based on the charity which collects symbolic donations, these effects should be further examined in studies that examine charities that work on the basis of financial provision rather than symbolic. Despite considered issues, we believe that the findings of our study have a practical implication because they provide potential guidelines on how to design slogans of humanitarian organizations in order to attract more donors.

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# Judging identities based on historicity: Discriminative validity of Ethnic identity delegitimization scale

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## Abstract

In this study, we further explored the validity of a novel psychological construct – Ethnic identity delegitimization (EIDL), a general tendency to question the legitimacy of ethnic groups that have been existing shorter than one's ethnic ingroup. Since it is based on historicity (i.e., the length of a group's existence), we tested its discriminative validity in comparison to two other historicity-based constructs: Autochthony beliefs and Collective self-continuity. A total of 138 psychology students (84% women) filled in three questionnaires: 1) short version of EIDL scale, 2) Autochthony beliefs scale, and 3) short Collective self-continuity scale. We performed confirmatory factor analysis (CFA), to contrast two different models: 1) a three-factor model with three mutually related but separated constructs, and 2) a one-factor model where all the items loaded on the same factor. The analysis indicated an excellent fit of the three-factor model, while the one-factor model had a suboptimal fit. Correlations between the three factors were moderate. The results confirm discriminative validity of Ethnic identity delegitimization, as well as its hypothesized relations to Autochthony beliefs and Collective self-continuity.

**Keywords:** Ethnic identity delegitimization; Ethnic identity; Autochthony beliefs; Collective self-continuity

## Introduction

Ethnic identity delegitimization (EIDL) represents a general tendency to question or disprove the existence of ethnic outgroups, thus denying their ethnic identity (Ninković, 2021). This tendency is derived from the belief that some ethnic groups have more “rights” to their ethnic identity than the others. It is based on the length of groups' existence – those who have existed longer have a more stable group identity that is thus more “real”. On the other hand, the identity of younger ethnic groups is seen as fragile and sometimes fabricated. This aspect of *historicity* is one of the key determinants of EIDL.

We defined EIDL as a general tendency, i.e. tendency not related to a particular outgroup. That means that, those who endorse a belief that older ethnic groups are more legitimate than the younger ones would not necessarily claim that their ingroup is more legitimate than the outgroup. This distinguishes EIDL from Bar-Tal's definition of delegitimization as a societal belief about a particular outgroup within the ethos of conflict (Bar-Tal et al., 2012; Oren & Bar-Tal, 2007). However, claims that comprise beliefs about ethnicity (il)legitimacy can be exploited to reinforce ethno-nationalist sentiment in conflict situations, as was the case during Yugoslav wars when they were used to

assimilate Bosniaks into Serbian or Croatian ethnic group (Hayden, 2002).

Since EIDL is a typical part of ethno-nationalist discourse, it was previously studied in the context of psychological constructs related to conservatism (Ninković, 2021). A substantial positive relation was found between EIDL and essentialist views of ethnic identity, strength of ethnic identification, and conservative political orientation. However, it appeared as a distinct construct, despite moderate correlations with these variables. Furthermore, it emerged as a significant predictor of Serbs' attitude towards Bosniaks over and above these predictors. To more precisely map its position within the nomological network, in this study, we related EIDL to two other constructs that are based on historicity: Autochthony beliefs and Collective self-continuity.

Autochthony denotes a belief that a territory belongs to its original inhabitants, i.e. that the group who settled first (or earlier) can claim the ownership of the territory (Martinović & Verkuyten, 2013). It is similar to EIDL due to the historicity aspect: both types of beliefs use history as an argument for excluding outgroups, or to perceive their identity as illegitimate. The distinction between the two constructs is in *what makes another group illegitimate*: while the length of its existence is crucial for EIDL, autochthony is mostly focused on primo-occupancy of a territory. Furthermore, EIDL is more directly related to identity.

Another historicity-based construct of interest here is Collective self-continuity (CSC). In ethnonational context, it represents a sense of continued existence over time that is derived from ethnic or national group membership (Smeekes & Verkuyten, 2015). Similar to Autochthony, CSC shares the historicity aspect with EIDL in that both constructs relate to one's group history in some manner. However, unlike EIDL, which is a belief related to outgroups, CSC is an identity motive that is always related to one's ingroup.

The aim of this study was to explore the relation between EIDL, Autochthony beliefs and CSC. Our hypothesis was that although EIDL will be moderately positively correlated to the two other constructs, it cannot be reduced to them (i.e. it will emerge as a separate one in factor analysis).

## Method

### Participants and Procedure

One hundred and thirty eight psychology students (84% women) from University of Belgrade participated in charge for course credits. Their age ranged from 18 to 42 years ( $M = 21.1$ ,  $SD = 2.4$ ). The survey was administered via SoSci survey platform (Leiner, 2019).

### Measures

All items were measured on a seven-point Likert scale.

Ethnic Identity Delegitimization was operationalized using shortened form of previously validated EIDL scale (Ninković, 2021), consisting of four items that loaded highest on the EIDL factor (i.e., *To be considered an ethnicity, a group should have long history and tradition.*) The short form of EIDL scale showed excellent internal consistency (Cronbach's  $\alpha = .94$ ).

Autochthony beliefs were measured with a previously used four-item scale (*Every country belongs to its original inhabitants*; Martinovic & Verkuyten, 2013). The scale had high internal consistency (Cronbach's  $\alpha = .89$ ).

Collective self-continuity scale (CSC) had two items: 1) *Being Serb gives me a sense of continuity — between past, present, and future* and 2) *Being Serb gives me the feeling that I am part of a long shared history* (Smeekees & Verkuyten, 2013). Two items had relatively high bivariate correlation ( $r = .76$ ).

## Results

Descriptive statistics and inter-correlations for the mean scores of three scales are detailed in Table 1. All three measures covered full theoretical range and had approximately normal distribution. Moderate inter-correlations indicate that the three constructs are distinct from each other.

Table 1. Descriptives and inter-correlations of mean scores

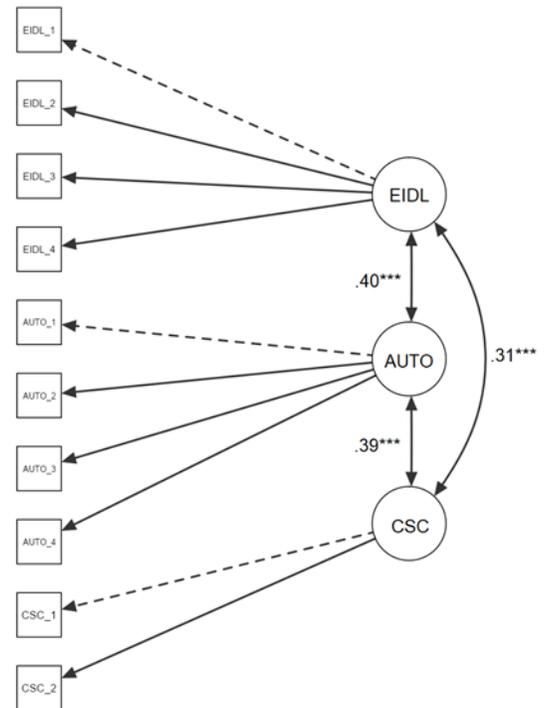
	Range	M	SD	Skewness	Kurtosis	2	3
1. EIDL	1 - 7	3.5	1.5	-	-	.37*	.29*
2. Auto	1 - 7	3.8	1.3	-	-		.35*
3. CSC	1 - 7	4.3	1.6	-	-		-
				0.50	2.03	**	**
				1.29	1.49		**
				1.62	1.72		

Note. Standardized values of Skewness and Kurtosis are reported; absolute values < 2.58 indicate normal distribution. \*\*\* $p < .001$

To test whether EIDL is distinct from Autochthony beliefs and Collective self-continuity, we ran confirmatory factor analysis (CFA) using Maximum Likelihood estimation. Two models were tested: 1) the hypothesized, three-factor model, with items from each scale loaded on separate factors, and 2)

one-factor model, where all items were loaded on one factor. The analysis was conducted using the Lavaan package (Rosseel, 2012) in R 4.0.0 (R Core Team, 2020).

In line with our hypothesis, a model with three separate factors showed an excellent fit:  $\chi^2(32) = 44.276$ ,  $p = .073$ ,  $\chi^2 / df = 1.38$ , CFI = .99, TLI = .98, SRMR = .03, RMSEA = .05 (90% CI [.00, .09]). Inter-correlations between the factors were moderate, as expected (Figure 1). The alternative, one-factor model had inadequate fit:  $\chi^2(35) = 414.372$ ,  $p < .001$ ,  $\chi^2 / df = 11.84$ , CFI = .60, TLI = .48, SRMR = .19, RMSEA = .28 (90% CI [.26, .31]).



Note. EIDL – ethnic identity delegitimization; AUT – autochthony beliefs; CSC – collective self-continuity  
\*\*\* $p < .001$

Figure 1. Three-factor model

## Discussion

Our results indicate discriminative validity of Ethnic identity delegitimization. We showed that it is a construct distinct from Autochthony beliefs and Collective self-continuity, but that the three constructs are moderately correlated. This is in line with the initial hypothesis that the three historicity-based constructs would be related, but not reducible to a single one.

Its similarity to Autochthony beliefs suggest that EIDL might be viewed as an aspect of historical defensiveness – a set of mechanisms that are used to downregulate specific intergroup emotions. In a proposed model of historical defensiveness, Bilewicz (2016) argues that a belief that one's ingroup is autochthonous in a given area legitimates violence

against the non-autochthonous outgroup, and downregulates intergroup emotions such as guilt. Our study suggests that even abstract beliefs about ethnic identity legitimacy, as operationalized through EIDL, might be a part of the defensive toolkit, which should be further explored. This abstract belief is easily adapted to specific outgroups in different conflict or post-conflict contexts (ex-Yugoslavia, Cyprus, Israel). Regardless of its position within the historical defensive strategies, it would be interesting to experimentally test whether people prone to this tendency would endorse it still if their ingroup, instead of outgroup, would be a target. Another line of research could be to experimentally induce or reduce this tendency and observe its effects on outgroup emotions and attitudes. It would shed light on the function of EIDL in intergroup relations.

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# Communication of civic information predicting civic knowledge and participation in youth

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## Abstract

The declining youth participation is often attributed to a lack of civic knowledge in youth. Accordingly, its promotion represents an educational goal aimed at spurring youth patriotism and engagement. While civic knowledge is predictive of civic participation, we proposed that schools are not the main setting where young people obtain socio-political information and construe said knowledge. Thus, we assessed objective and subjective civic knowledge of Slovenian adolescents and emerging adults, who also reported on the frequency of acquiring news about social and political issues from different sources, and the incidence of both their civic and political participation. Even though we found the teachers an important source of information, other socialization agents contributed more to the latent score of participants' exposure to information. We tested the proposed model of exposure to information predicting participation through civic knowledge, and observed significant differences among individuals of different education levels. In vocational students, the extent of exposure to civic information was linked to their subjective, but not objective knowledge, while in emerging adults the exposure was predictive of both types of knowledge. Overall, subjective knowledge was a better predictor of political participation than objective knowledge across the groups.

**Keywords:** civic knowledge; civic participation; political participation; socialization agents; students

## Introduction

Civic knowledge is widely considered as an important predictor of civic participation (e.g., Delli Carpini & Keeter, 1996; Galston, 2007; Larcinese, 2007), and its promotion is one of the main policy and educational goals in many democratic states. Consequently, researchers often focus on the role and efficiency of civic education in schools. However, their findings appear ambiguous (Baucal et al., 2020; Gainous & Martens, 2012; Isac et al., 2011). The ambiguity continues in defining the actual role of civic knowledge – in different studies it is considered a prerequisite of civic engagement, a mediator or moderator between different variables and civic engagement, or even an outcome of civic engagement (i.e., youth attain knowledge through experience; see Batheld, 2015 for review).

Regardless of the specific role of civic knowledge, opportunities for civic learning in Slovenian curricula are limited beyond 9-year elementary school as civic education is only gradually being implemented as a subject. Moreover, schools represent only one of the socialization agents, and may become less important in secondary and tertiary

education when friends and/or other significant persons become more important socialization agents (see Zupančič & Svetina, 2020).

In the present study, we thus extended our scope and explored the contribution of different socialization agents to young people's exposure to civic information in a diverse sample of Slovenian youth. Specifically, we were interested in how such exposure predicts the young people's subjective and objective civic knowledge, how accurately do they assess their civic knowledge, and how civic knowledge, in turn, influences civic and political participation of groups differing in age (adolescents and emerging adults) and education programme in secondary schools. We hypothesized that participants in both age groups and across the educational programmes use various sources of civic information, and that the contribution of teachers (schools) would not be high in comparison to other socialization agents. Moreover, we expected the exposure to information to predict civic knowledge, which would further increase both individuals' political and civic activities.

## Methods

### Participants and procedure

We collected the data through an online survey hosted on 1ka.si. The invitation to participate circulated on social media, mailing lists of various student associations and youth organizations, and through teachers/school counsellors in selected secondary schools. The final sample included 217 participants aged between 15 and 29 ( $M = 19.0$  years,  $SD = 4.0$ ), and was balanced by gender (49% female). It included secondary school students (17% enrolled in vocational, 17% in professional, trade or technical programmes, and 25% in grammar schools), and emerging adults (41%) who were either students or employed.

### Measures

**Sources of information** Participants reported how often they acquire information on social and/or political issues from teachers (or at school), parents, peers (friends), partners or other close individuals, and news. The ratings were provided along a 7-point scale (1 – *never*, 7 – *very often*, and *I can't assess*).

**Civic knowledge** They self-assessed their (subjective) civic knowledge using a 7-point scale (1 – *I know close to nothing*,

7 – I know very much about politics and political events), and responded to the measure of “objective” knowledge. The latter comprised 5 open-ended and 25 multiple-choice questions (including I don’t know option) about the facts and understanding of the Slovenian and the European political system,

laws and civic concepts (e.g., human rights). Some questions were based on the extant measures of civic knowledge (Klemenčič et al., 2019; Pavlović, 2012; ZRSS, 2019, b, c), and others were created anew. The questions had adequate distribution of difficulty (.13–.83) and discrimination indices (.11–.63).

**Civic and political participation** For parsimony, both forms of participation were rated using a single 7-point item (1 – never, 7 – very often). Political participation pertains to the traditional forms of engagement related to political goals (e.g., voting, rallying), while civic participation comprises a wide scope of engagement without a particular political aim (e.g., volunteering).

**Demographics** Participants reported their gender, age, type of education programme (vocational, trade or technical, grammar school) or their field of studies, and occupational status.

## Results

As expected, the participants reported gathering socio-political news from a variety of sources – mean scores were, with few exceptions, close to the midpoint response of “sometimes” (Table 1). Older participants were more often obtaining information from friends ( $r = .36, p < .001$ ), close others ( $r = .41, p < .001$ ), and news ( $r = .21, p = .002$ ), but the frequency for teachers and parents was not related to age. Regardless, emerging adults were getting the information from teachers less often than secondary school students ( $F_{[3,194]} = 5.04, p = .002, \eta^2 = .07$ ).

Objective civic knowledge varied significantly between the groups of participants ( $F_{[3,213]} = 23.67, p < .001, \eta^2 = .26$ ): vocational ( $M = 8.08, SD = 5.85$ ) and professional school students ( $M = 9.36, SD = 5.66$ ) exhibited less knowledge than

Source	Secondary school students			University students (emerging adults)
	Vocational	Professional	Grammar	
Teachers	3.18 (1.82)	3.27 (1.68)	3.04 (1.59)	2.26 (1.41)
Parents	3.65 (1.83)	3.78 (1.81)	4.74 (1.82)	4.37 (1.74)
Friends	2.58 (1.57)	2.54 (1.57)	3.65 (1.94)	3.95 (1.69)
Partner/close others	2.31 (1.62)	2.44 (1.56)	3.33 (1.88)	4.04 (1.99)
News	3.49 (1.92)	3.33 (1.79)	4.20 (1.65)	4.36 (1.69)
<i>Notes.</i> Ratings were provided on a 7-point scale; standard deviations are presented in parentheses.				

grammar school students ( $M = 15.24, SD = 5.99$ ) and emerging adults ( $M = 17.01, SD = 6.91$ ). When comparing subjective and objective knowledge scores, we observed a moderate association between the two ( $r = .39, p < .001$ ). The gap was, however, narrower in emerging adults

( $r = .53, p < .001$ ), and largest in vocational school students ( $r = .15, p = .39$ ).

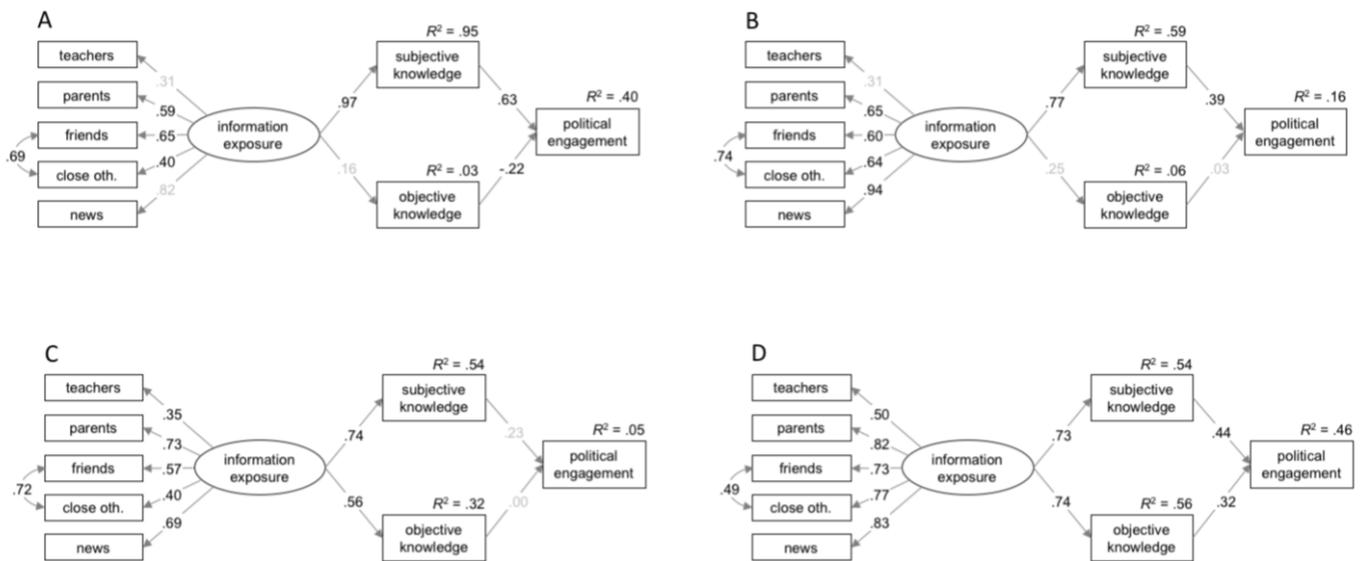
Political engagement was slightly higher in emerging adults compared to the other three groups of adolescent students ( $F_{[3,209]} = 6.08, p < .001, \eta^2 = .08$ ), but no difference among the groups was observed in civic engagement ( $F_{[3,209]} = 0.35, p = .79, \eta^2 = .01$ ).

We tested the proposed model of exposure to information predicting participation through civic knowledge using a multigroup structural equation model across four groups based on education level. The model had an acceptable fit to the data ( $\chi^2 = 603.86, df = 28, RMSEA = .088, 90\% CI [.061, .116], CFI = .95, SRMR = .059$ ); however, it was non-invariant across groups and significant differences in loadings were observed between individuals of different education levels (Figure 1).

In vocational and professional school students, the extent of exposure to civic information was linked to their subjective, but not objective knowledge, while in grammar school students and emerging adults the exposure was predictive of both types of knowledge. Contrary to our expectations, civic participation was unrelated to either kind of knowledge across groups, and the relation with political participation varied. Only subjective civic knowledge was a significant predictor of political participation in students of vocational ( $R^2 = .40$ ) and professional programmes ( $R^2 = .16$ ), while in emerging adults, both measures of civic knowledge predicted their political participation ( $R^2 = .46$ ).

## Discussion

The results support our hypothesis that school is far from being the only important source of information about socio-political issues in adolescence and emerging adulthood. The contribution of teachers to overall information exposure was insignificant or comparably low in all four groups. While



schools indeed represent a convenient environment to promote civic knowledge in the population, relying solely on teachers to communicate civic information may thus have limited efficiency. This might be an artefact of the Slovenian context/current curriculum lacking civic education beyond primary schools and thus, the role of school should not be hastily generalized. Further, the role of parents and peers was more important in older participants and varied across educational programmes, which is in line with developmental importance of those socialization agents in the transition to adulthood (e.g., Zupančič & Svetina, 2020).

While the participants were rather inaccurate in assessing their “subjective” civic knowledge, the state of being informed contributed comparably more to subjective than objective knowledge. Moreover, the contribution of subjective knowledge to political participation consistently overperformed the contribution of objective knowledge across the samples, suggesting that mere teaching the youth about civic concepts might fall short if not accompanied with strategies to promote their self-perceptions in the civic realm (e.g., by strengthening their civic identity, interest, trust, and agency).

Accordingly, this suggests that civic knowledge might also be considered a psychological resource and not just a skill enabling youth to participate. In our models, it was a mediator between the “background variable” of information exposure and participation, but the relatively simple cross-sectional correlational study design does not allow for any (causal)

conclusions about its actual position in predicting the participation.

Future research should thus include additional background (e.g., demographics, civic experiences) and psychological characteristics such as perceptions of how informed the participants are, their political interest and political agency, and observe both the relative contribution and the position of knowledge in such models (e.g., knowledge and information seeking might be “byproducts” of participation). Finally, a more nuanced approach to sources of information and the reasons why they are (not) used (e.g., perceived credibility and knowledge of sources, their ideological alignment with the participant) might be beneficial in understanding how to communicate civic information and promote civic learning more efficiently. Given that the informational landscape is becoming increasingly diverse, it would be interesting to consider different news outlets that might provide considerably different types of information (e.g., traditional media, news websites, social media etc.).

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Figure 1: Structural models of the relationship between information exposure, civic knowledge and political engagement in (A) vocational school students, (B) trade/technical or professional school students, (C) grammar school students, and (D) university students (emerging adults). The loadings in gray were statistically insignificant at  $p < .05$ .

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