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CONTENTS

Adaptation and Validation of Ecological Identity Scale (EIS) on a Sample of Participants From Serbia: A Preliminary Study[1]*

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Abstract

Studying environmental identity is crucial for understanding diverse relationships between people and the natural world, which has direct implications for fostering pro-environmental attitudes and behaviors. The aim of this research was to adapt the Ecological Identity Scale into Serbian and examine the psychometric characteristics of the adapted version in comparison to the original version, using a sample of participants from Serbia. The sample consisted of 146 participants (M_{age} = 34.21, SD_{age} = 13.41, Min = 18, Max = 67), of whom 66.4% were female. To assess the construct validity of the adapted scale, confirmatory factor analysis was conducted. The results indicate that the same number of dimensions showed in both the original and adapted versions of the scale (sameness, differentiation and centrality). The assessment of convergent validity, conducted by comparing the scores obtained on the Ecological Identity Scale with those from the Revised Ecological Identity Scale and the New Ecological Paradigm Scale, supports the scale's convergent validity. The nomological network of the adapted version was examined by calculating correlations between the Ecological Identity Scale scores and measures of self-transcendence and self-enhancement, with the results largely supporting its equivalence to the nomological network of the original scale. The internal validity of the scale was assessed through the relationships between its measures, and the results support this aspect of validity. The scale demonstrated satisfactory internal consistency reliability in the current sample. Despite the study's limitations, the adapted version of the scale can be used for assessing ecological identity with some caution and primarily for research purposes to allow for potential modifications of the instrument.

Keywords: ecological identity, Ecological Identity Scale, adaptation, validation.

Adaptation and Validation of Ecological Identity Scale (EIS) on a Sample of Participants From Serbia: A Preliminary Study

Introduction

In today's world, one of the most pressing issues is the condition of the environment and the need for its protection and preservation. Identity can enhance our understanding of individual responses to climate change, especially when taking climate action reflects a person's sense of self (Vesely et al., 2021). In this context, the development of ecological identity plays a crucial role, as it lays the foundation for pro-environmental behavior that can ensure a sustainable and meaningful existence for both present and future generations. Ecological identity refers to the way individuals relate to nature, encompassing their connection to it on cognitive, emotional, and behavioral levels. It involves gaining knowledge about the natural world, forming emotional bonds with it, and expressing these bonds through environmentally responsible actions (Marković et al., 2024).

Literature Review

Ecological Identity

Ecological psychology has been explored since the 1970s early research focusing on predictors of environmental concern and related behaviors (Perrin & Benassi, 2009). Later studies shifted toward examining identity, questioning whether it is based solely on self-perception or also shaped by social group membership and role-based experiences (Stets & Burke, 2000).

Some authors argue that the literature contains multiple, competing, and often ambiguous meanings of ecological identity, making the concept not entirely clear (Dunlap & McCright, 2008). It is also known as the ecological self and refers both to the degree and the ways in which an individual perceives and experiences themselves as part of the social and biophysical (ecological) system (Walton & Jones, 2018). It pertains to the extent to which a person perceives themselves as part of a broader, integrated system characterized by mutually beneficial processes and an interconnected network of relationships (Walton & Jones, 2018; Hayes-Conroy & Vanderbeck, 2005).

Ecological identity is reflected in individuals' choices and behaviors across various life domains, such as daily decisions, careers, and social or political engagement (Tomashow, 1996). It encompasses both personal and social dimensions and functions as a role identity, influencing group affiliations and roles individuals assume within those groups (Stets & Burke, 2000; Zavestoski, 2003).

Measuring Ecological Identity

A review of the literature and existing instruments suggests that most tools have been developed to examine constructs within the domain of environmental psychology, while significantly fewer instruments have been designed specifically to operationalize ecological identity and its various aspects.

Some authors have explored and measured the relationship between an individual and their natural environment, offering insights into the operationalization of ecological identity. Examples include: *The Inclusion of Nature in the Self (INS)* scale (Schultz, 2001), initially developed as a single-item implicit measure and later adapted into an *Implicit Association Test* (Schultz et al., 2004); *The Environmental Identity Scale (EI)* (Stets & Biga, 2003; 11 items); *The Mayer-Frantz Connectedness to Nature Scale (CNS)* (Mayer & Frantz, 2004), an explicit, one-dimensional measure of emotional attachment to nature (14 items); *The Connectivity with Nature Scale (CWN)* (Dutcher et al., 2007; 5 items); *The Nature Relatedness Scale (NR)* (Nisbet et al., 2009), which consists of three dimensions (emotional, cognitive, and experiential; 21 items), along with a shorter version (*Nature Relatedness Short Version (NR6)*; Nisbet & Zelenski, 2013; 6 items); *The Love and Care for Nature (LCN) Scale* (Perkins, 2010; 15 items).

In order to operationalize the relationship between identity and the natural environment, Clayton (2003) developed the *Environmental Identity Scale (EID)*, which consists of 12 items and measures individual differences in a stable sense of interdependence and connection with nature. Over time, the instrument has been modified and the latest version titled the *Revised Environmental Identity Scale* (Clayton et al., 2021), which consists of 14 items. This scale has been adapted for use in different cultural contexts, including a validated version for a Croatian sample (Anđić & Hadela, 2021).

The authors of the *Ecological Identity Scale*, which was adapted and validated in this study (Walton & Jones, 2018), argue that while various ecological identity operationalizations are used worldwide, they do not encompass all dimensions or aspects of ecological identity. They acknowledge that some scales are more comprehensive than others (Clayton et al., 2021; Stets & Biga, 2003) but also highlight certain shortcomings. They note that the Environmental Identity Scale (EI) (Stets & Biga, 2003) primarily focuses on individual foundations of ecological identity. Moreover, they argue that both the Revised Environmental Identity Scale (Clayton et al., 2021) and the Environmental Identity Scale (Clayton, 2003) are conceptualized based solely on individual experiences resulting from direct interaction with the environment and beliefs related to membership in ecological groups. The authors suggest that they overlook key aspects of construct, differentiation and centrality (the tendency of identity to be activated) which are fundamental characteristics from the perspective of Identity theory.

Correlates of Ecological Identity

People who see themselves as environmentally conscious are more likely to engage in behaviors that protect the environment (Burke & Stets, 2009). Repeated pro-environmental actions help express and reinforce ecological identity. A strong ecological worldview—seeing ecology as central to life—also supports this identity (Dunlap et al., 2000). The New Ecological Paradigm Scale measures such views (Dunlap et al., 2000), which shape how individuals perceive the world. While worldview reflects one's outlook, identity reflects how one lives within it. Thus, a pro-environmental worldview often fosters an ecological identity, which is closely linked to personal responsibility and a deep connection with nature (Walton & Jones, 2018). Additionally, the results of meta-analyses indicate the existence of a significant overall effect, precisely, that both Ecological Worldview and Connectedness to Nature are good predictors of Environmental Identity (Veljković et al., 2021).

Research indicates that individuals who prioritize others and the collective, reflecting self-transcendence values, are more likely to develop a strong ecological identity (Walton & Jones, 2018). These values relate to social values, self-transcendence values, and self-enhancement values, which represent trans-situational goals and beliefs about desired end states of existence and the principles that guide achieving such states (Schwartz, 1992; Schwartz, 2012). Self-transcendence values foster self-awareness, concern for others, and care for nature, increasing the likelihood of adopting environmentally protective roles (Schwartz, 2012). Studies have shown strong links between these values, ecological identity, and pro-environmental attitudes (Clayton, 2003; Steg & de Groot, 2012; Stern et al., 1995). In contrast, those who prioritize personal status, control, success, and self-enhancement values, are less likely to form an ecological identity. Self-enhancement or self-promotion values motivate people to satisfy their own needs, strive for personal success, achieve prestige, and exert control or dominance over resources and other people (Schwartz, 2012). These values are associated with egoistic, individualistic motivations and a sense of separation from others and the natural world (Colvin et al., 1995; Steg & de Groot, 2012). Self-transcendence and self-enhancement thus represent opposing motivational orientations that shape one's relationship to the ecological and social world. When environmental protection is central to one's identity, it can indirectly influence broader drivers of pro-environmental behavior, such as ecological worldview and self-transcendence values (Walton & Jones, 2018). These values are expressed through identity, which serves as a specific channel linking values to behavior (Hitlin, 2003). Identity thus bridges abstract values and concrete environmental actions, even in uncertain contexts (Leary et al., 2011). Walton and Jones (2018) propose that internalizing ecological identity enables consistent expression of values and worldview through environmental engagement. Results of meta-analyses suggest robust, medium-sized to strong links of both pro-environmental intentions and environmental self-identity (Vesely et al., 2021) and that overall identity associates pro-environmental behavior with a medium Pearson's r (Udall et al., 2021).

The Ecological Identity Scale and Psychometric Characteristics
Obtained in Previous Studies

Walton and Jones (2018) developed the Ecological Identity Scale from a cognitive perspective, grounded in Identity Theory (Stets & Burke, 2000) and Social Identity Theory (Tajfel & Turner, 1979). The scale's items reflect key theoretical aspects linked to sustainable consumer behavior, emphasizing that identification with an issue is necessary for meaningful action (Walton & Jones, 2018). While it was once thought that limited knowledge hindered sustainable behavior, a study with adolescents found that a positive attitude toward nature was a stronger predictor of sustainable consumer behavior than ecological knowledge alone (Roczen et al., 2014).

The instrument includes 18 items and was designed to capture different aspects of ecological identity: *sameness, differentiation,* and *centrality*, within a broader socio-ecological context. Building on previous scales (e.g., Clayton et al., 2021; Stets & Biga, 2003), the authors added differentiation and centrality to the existing identification dimension. *Sameness* measures the stability of one's ecological identity at both personal and group levels, including feelings of connectedness with nature and identification with environmentally conscious groups. *Differentiation* captures how individuals distinguish themselves from anti-ecological traits, roles, or groups. *Centrality* assesses how central ecological identity is to a person's self-concept and how often it influences behavior. The scale thus integrates not only identification with pro-environmental individuals but also differentiation from non-ecological influences and the importance of ecological identity in everyday life.

The scale was adapted on a sample of students from Turkey (Gezer & Ilhan, 2018). Exploratory factor analysis supported retaining three factors, confirmed by CFA with acceptable fit indices (model characteristics: χ^2/df = 2.02, RMSEA = .069, SRMR = .071, NFI = .90, NNFI = .94, CFI = .94, IFI = .94). The internal consistency was generally satisfactory (sameness α = .85; differentiation α = .66; centrality α = .77, total α = .78). In a Portuguese sample (Neves, 2021), initial confirmatory factor analysis of the three-factor model showed poor fit. After removing four items, a 14-item version achieved acceptable fit, which improved to good fit following the addition of correlated residuals ($\chi^2_{(70)}$ = 206.413, p = .000, χ^2/df = 2.949, CFI = .964, TLI = .953, RMSEA = .061). The internal consistency was satisfactory (sameness α = .88; differentiation α = .82; centrality α = .83, total α = .87).

It is important to note that several limitations of both the original study and subsequent validation studies warrant attention. The authors of the original study (Walton & Jones, 2018) did not clearly define the exact number of dimensions of the Ecological Identity Scale. Although they propose three dimensions—sameness, differentiation, and centrality—based on theory, they also suggest the scale may be unidimensional and that these dimensions emerge dynamically. They used principal component analysis instead of exploratory factor analysis which found that the first component (41% variance) captures core ecological identity aspects, such as identification with nature and valuing environmental protection, considered primary.

The authors consider these characteristics to be of primary importance in ecological identification. The second (differentiation) and third (centrality) components are seen as secondary. Notably, the original study also did not include confirmatory factor analysis which is one of the notable psychometric shortcomings. Similar issues appear in translated versions, where initial CFA results showed poor fit and were extensively modified based on data-driven decisions which raised concerns about overfitting and violating core principles of CFA. Furthermore, neither the original study nor the Portuguese adaptation (Neves, 2021), as can be seen from the previously mentioned text, offers strong support for a stable three-factor structure. The need for different post hoc modifications across studies undermines the argument for structural equivalence.

However, this instrument was adapted and validated because it assesses how individual and group-based ecological identity influence environmental action. Although an adapted Revised Environmental Identity Scale exists in the Bosnian-Croatian-Montenegrin-Serbian region (Anđić & Hadela, 2021), it measures only one dimension. In contrast, the scale used in this study captures a broader range of key aspects, as emphasized by its original authors.

The main goal of this study was to adapt and validate the Ecological Identity Scale using a sample of participants from Serbia. The equivalence of the factor structure of the adapted version of the scale with that of the original was examined through confirmatory factor analysis. Convergent validity was assessed by calculating correlations between scores on the Ecological Identity Scale and scores on the New Ecological Paradigm Scale (Dunlap et al., 2000) and the Revised Ecological Identity Scale (Clayton et al., 2021). Additionally, the equivalence of the nomological network of the adapted version was examined by correlating it with measures of social values, gender and age. Finally, interscale correlations among the scale's dimensions were calculated, and internal consistency reliability was assessed. All analyses were conducted based on the empirical findings presented in the previous sections.

Method

Sample and Procedure

From a convenience sample of 157 participants, 11 were excluded (8 failed attention checks and 3 were multivariate outliers), resulting in 146 participants. Most were female (66.4%), while males comprised 33.6%. The mean age was 34.21 years ($SD = 13.41$), ranging from 18 to 67. Regarding educational attainment, 41.1% completed high school, 41.8% held a university degree or higher, 4.1% had only primary education, and 13% completed vocational education. The mean score of satisfaction with participants' financial situation related to households was 2.98 ($SD = 1.14$).

The participants were recruited online (Google Forms via social media and personal contacts; 86) and offline (71) via social media and personal contacts.

Participation was anonymous, voluntary, with informed consent provided. The only inclusion criterion was being 18 years or older. Permission to use the original scale was obtained. The adaptation used a back-translation method with two independent translators. Ethical approval was granted by the Ethics Committee of the Department of Psychology, Faculty of Philosophy in Niš (approval no. 6-2024).

Instruments

Sociodemographic variables: gender, age, level of education, socio-economic status (subjective assessment of satisfaction with family income, five-point Likert scale (extreme values: 1 - *Strongly disagree*; 5 - *Strongly agree)*).

Ecological Identity Scale (EIS; Walton & Jones, 2018). The instrument consists of 18 items. It was conceptualized to establish a connection between different forms of identification with nature and the environment (*sameness*, *differentiation*, and *centrality*), but the instrument is conceptualized so that it can also be one-dimensional. Respondents are required to indicate their level of agreement with each statement on a five-point Likert scale (extreme values for items 1 through 12: 1 - *Strongly disagree*; 5 - *Strongly agree;* for items 13 through 15: 1 - *Not at all likely;* 5 - *Very likely*; for item 16: 1 - *Not at all close*; 5 - *Very close*; for item 17: 1 - *Not at all important*; 5 - *Very important*; for item 18: 1 - *Do not play a role at all*; 5 - *Play a very significant role*). The adaptation used a back-translation method with two independent translators.

The New Ecological Paradigm Scale (Dunlap et al., 2000). This scale is designed to assess respondents' pro-ecological attitudes. It consists of 15 statements. Within the scale, two dimensions can be operationalized, measuring two different orientations: *the NEP orientation* (*New Ecological Paradigm Orientation*) and *the DSP orientation* (*Dominant Social Paradigm Orientation*). *NEP orientation* focused on beliefs about humanity's ability to upset the balance of nature, the existence of limits to growth for human societies, and humanity's right to rule over the rest of nature (item example: "Plants and animals have as much right as humans to exist"). *DSP orientation* consists of the traditional values, attitudes, and beliefs (anthropocentric) (item example: "The so-called "ecological crisis" facing humankind has been greatly exaggerated"). The respondent is required to indicate their level of agreement with each statement on a five-point Likert scale (extreme values: 1 - *Strongly disagree*; 5 - *Strongly agree*).

The Revised Environmental Identity Scale (EID-R; Clayton et al., 2021; for Croatian adaptation see Anđić & Hadela, 2021). The scale consists of 14 statements. Respondents are required to indicate their level of agreement with each statement on a seven-point Likert scale (extreme values: 1 - *Does not apply to me at all*; 7 - *Fully applies to me*).

The Portrait Values Questionnaire (Schwartz et al., 2001) is designed to examine the values that respondents hold by presenting them with various descriptions of values that people may have in their lives. It consists of 21 statements that operationalize

10 different values (*Benevolence, Universalism, Self-Direction, Stimulation, Hedonism, Achievement, Power, Security, Conformity,* and *Tradition*). The dimensions considered in this study were *Benevolence, Universalism, Hedonism, Achievement*, and *Power*. Respondents are required to indicate their level of agreement with each description of people provided in the statements, assessing how similar each described person is to them on a six-point Likert scale (extreme values: 1 – *Very much like me*; 6 – *Not like me at all*; the sum scores were calculated after inverting the responses).

A single-item marker for checking attention and response validity among participants ("Please, as a sign that you are reading carefully, select "Strongly agree" or "7" " and "Please, as a sign that you are reading carefully, select "Not at all like me" or "1" ").

Data Processing

Participants who failed the attention check (item 8) and three multivariate outliers were excluded from the analysis. The factor structure of the Ecological Identity Scale was assessed using JASP. After examining the multivariate distribution (kurtosis and critical values), substantial deviations from multivariate normality were observed, therefore, a robust estimation method, diagonally weighted least squares (DWLS) was employed (Mindrila, 2010; Petrović et al., 2020). Model fit was evaluated using several indices: chi-square test; RMSEA (< .06 good, < .08 acceptable); SRMR (< .08 good); CFI and TLI (> .90 acceptable, > .95 good) (Brown, 2015; Browne & Cudeck, 1993; Hu & Bentler, 1999, cited in Pedović et al., 2022). Internal consistency was measured with Cronbach's alpha and McDonald's omega using JASP. Normality tests guided the use of parametric correlations, and external validity and inter scale correlations were examined via Pearson's correlations using SPSS 20.0.

Results

Descriptive statistics for all study variables are presented in Table 1.

Table 1
Descriptive Statistical Indicators of the Variables Used in the Study

Variable	Min	Max	*M*	*SD*	*Sk*	*Ku*	α	ω
Sameness	1.57	5.00	3.69	0.82	-0.50	-0.26	.93	.93
Differentiation	2.00	5.00	3.90	0.84	-0.71	-0.40	.85	.86
Centrality	1.33	5.00	3.80	0.99	-0.92	-0.03	.94	.94
Environmental identity - R	1.57	7.00	5.35	1.50	-1.16	0.21	.97	.97
Benevolence	2.50	6.00	4.85	1.03	-0.83	-0.20	.68[*]	/
Universalism	2.00	6.00	4.76	0.96	-0.56	-0.47	.69	.76
Hedonism	1.00	6.00	3.95	1.17	-0.10	-0.50	.68[*]	/

Achievement	1.00	6.00	4.25	1.10	-0.54	0.22	.51*	/
Power	1.00	5.50	3.34	1.17	-0.18	-0.52	.33*	/
NEP orientation	1.38	5.00	3.83	0.78	-1.24	1.17	.84	.85
DSP orientation	1.29	4.57	2.76	0.74	0.65	-0.06	.75	.78
Ecological identity (mean score)	1.84	5.00	3.79	0.76	-0.90	0.26	.95	.95

Note. Environmental identity – R – the mean score obtained on the Revised Environmental Identity Scale (Clayton et al., 2021); NEP orientation – New Ecological Paradigm Orientation; DSP orientation – Dominant Social Paradigm Orientation; *Omega coefficients were not calculated for four PVQ values scales because there were only two items per scale and we reported Pearson's correlation coefficients between two items than an alpha coefficient

Examination of Factor Structure

Confirmatory factor analysis was conducted using JASP. Due to multivariate non-normality (kurtosis = 59.011; c.r. = 13.827), Diagonal Weighted Least Squares (DWLS) estimation method was used to assess the difference between the empirical and theoretical intercorrelation matrices. This estimation method was chosen because it has been shown to be suitable in situations where the assumption of multivariate normality is violated or when data are measured at an ordinal level (Mindrila, 2010). This method has been demonstrated to produce accurate and precise parameter estimates under such conditions, as it calculates robust chi-square values and fit indices, applying a correction for non-normal data distributions (Mindrila, 2010). Several models were tested based on prior studies: a one-factor model (due to authors suggesting that the latent structure of the scale can be viewed as unidimensional; Walton & Jones, 2018), a two-factor model with uncorrelated factors (due to the high correlation obtained between sameness and centrality (which were considered as a single factor) and differentiation and three-factor model conceptualized with correlations allowed between all factors (Gezer & Ilhan, 2018; Neves, 2021) (Table 2).

Table 2

Absolute Fit Indices and Incremental Fit Indices of the Examined Models

Model	χ^2	df	CFI	TLI	RMSEA	RMSEA 90% CI		SRMR
One-factor model	996.863*	135	.903	.890	.210	.198	.222	.148
Two-factor model (with uncorrelated factors)	1.306.929*	135	.898	.885	.215	.203	.227	.238
Three-factor model (with correlated factors)	331.999*	132	.977	.974	.102	.089	.116	.075

Note. * $p < .001$

The three-factor model with correlated factors showed the best fit for the data (χ^2(132) = 331.999, p < .001; SRMR = .075; CFI = .977; TLI = .974; RMSEA = .102). Although the chi-square test was significant, it is often sensitive to sample size and not solely relied upon (Cherry, 2005; Schermelleh-Engel et al., 2003; Vandenberg, 2006, as cited in Gallagher et al., 2008); other indices suggest a mostly good fit. Both CFI and TLI indicated good fit, SRMR was acceptable, but RMSEA did not meet the acceptable threshold. Overall, the model shows a partially good fit. Additionally, the results indicate that the value of the CFI index supports the notion of acceptable model fit when considering the one-factor model. The TLI index is close to the threshold value of .90, at which point it could be interpreted as indicating acceptable fit, a level that could be achieved by adding correlated residuals between pairs of items. Other fit indices, however, do not indicate an acceptable model fit.

Examination of Convergent Validity

The obtained results indicate a statistically significant correlation between the dimensions within the Ecological Identity Scale, the Revised Ecological Identity Scale (Clayton et al., 2021), and the New Ecological Paradigm Scale (Dunlap et al., 2000) (Table 3).

The Ecological Identity Scale's dimensions (sameness, differentiation, centrality) and overall score show significant moderate positive correlations with the Revised Ecological Identity Scale. These dimensions and the overall score also correlate moderately and positively with the dimensions of New Ecological Paradigm Orientation Scale. Differentiation, centrality, and the overall score correlate negatively (low to moderate) with the Dominant Social Paradigm Orientation, while sameness shows no significant correlation with it.

Table 3

Pearson Correlation Coefficients Between the Dimensions of the Ecological Identity Scale, Revised Ecological Identity Scale and New Ecological Paradigm Scale

	Environmental identity - R	NEP-O	DSP-O
Sameness	.56**	.56**	-.15
Differentiation	.40**	.56**	-.54**
Centrality	.54**	.65**	-.22**
Ecological identity (mean score)	.59**	.69**	-.35**

Note. Environmental identity - R – the mean score obtained on the Revised Environmental Identity Scale (Clayton et al., 2021); NEP-O – New Ecological Paradigm Orientation; DSP-O – Dominant Social Paradigm Orientation; *p < .05; **p < .01

Examination of the Nomological Network

The assessment of external validity was conducted through an examination of the nomological network. Pearson correlation coefficients were calculated between the measures of the dimensions of the Ecological Identity Scale, as well as the overall measure obtained on this scale, the measures of social values (Benevolence, Universalism – self-transcendence values; Hedonism, Achievement, and Power – self-enhancement values), gender and age. Moreover, variables from all three instruments were included to enable comparison.

Table 4

Pearson Correlation Coefficients Between the Dimensions of the Ecological Identity Scale and External Variables

	S	D	C	EI (ms)	EI-R	NEP-O	DSP-O
Benevolence	.34**	.24**	.30**	.34**	.66**	.26**	-.17*
Universalism	.47**	.40**	.45**	.52**	.69**	.43**	-.32**
Hedonism	.09	.06	.06	.08	.23**	.15	-.06
Achievement	.05	.11	-.03	.05	.16	.08	-.07
Power	-.29**	-.19*	-.33**	-.32**	-.29**	-.29**	.08
Gender	.17*	.16*	.24**	.23**	.32**	.30**	.01
Age	.10	-.07	.10	.05	.06	-.01	.05

Note. S – Sameness; D – Differentiation; C – Centrality; EI(ms) – Ecological identity (mean score); EI-R – the mean score obtained on the Revised Environmental Identity Scale (Clayton et al., 2021); NEP-O – New Ecological Paradigm Orientation; DSP-O – Dominant Social Paradigm Orientation; *Note*: *$p < .05$; **$p < .01$

The obtained results (Table 4) indicate a statistically significant correlation between the measures of the dimensions within the scale, as well as the overall measure on the Ecological Identity Scale, the social values of Benevolence and Universalism (self-transcendence values; negative correlation), Power (self-enhancement value; positive correlation) and gender (positive correlation).

Interscale Correlations

The original authors (Walton & Jones, 2018) and subsequent adaptations (Gezer & Ilhan, 2018; Neves, 2021) did not report interscale correlations. However, in this study Pearson's correlations were calculated to examine relationships between the scale's dimensions. It was hypothesized that all dimensions would show significant positive correlations, consistent with the theoretical framework.

The obtained results indicate that there are statistically significant positive correlations between all dimensions within this scale (moderate to high intensity (Table 5).

Table 5

Pearson Correlation Coefficients Between the Dimensions of the Ecological Identity Scale

Variable	Differentiation	Centrality	EI (ms)
Sameness	.45**	.83**	.89**
Differentiation		.49**	.74**
Centrality			.92**
EI (ms)			

Note. EI(ms) – Ecological identity (mean score); *p* < .05; **p* < .01

Discussion

The main goal of this study was the adaptation and validation of the adapted version of the Ecological Identity Scale (Walton & Jones, 2018) on a sample of participants from Serbia. Therefore, adapting this instrument could contribute to raising awareness about environmental problems, encouraging people to think more actively about their potential impact on the environment. Given the global importance of environmental issues, such an instrument can help raise awareness and promote environmental consciousness at the individual level. While the BCMS region has a unidimensional ecological identity measure (Anđić & Hadela, 2021), it lacks the multidimensional perspective of this scale. Given the original scale's United States context, this study examined its reliability and validity within the BCMS cultural and social setting.

The initial hypothesis was that the adapted Ecological Identity Scale would replicate the original's factor structure, three-factor or one-factor, though the original authors did not specify the optimal solution or conduct confirmatory factor analysis (Walton & Jones, 2018). Confirmatory factor analysis in this study showed the three-factor model with correlated factors achieved acceptable fit, generally supporting the hypothesis. However, it is important to mention again that the characteristics of the one-factor model were such that, based on the CFI index values, an acceptable model fit could be assumed, while the TLI value was close to the threshold of .90. With a small number of model modifications, the fit indices could be improved and would indicate acceptable model fit when considering a broader set of fit indices.

This study hypothesized and confirmed positive correlations between all Ecological Identity Scale dimensions (sameness, differentiation, centrality) and overall score with the Revised Ecological Identity Scale, supporting convergent validity. Previous studies did not examine the relationship between the Ecological Identity Scale (Walton & Jones, 2018) and the Revised Ecological Identity Scale (Clayton et al., 2021). Significant positive correlations with the New Ecological Paradigm (NEP) Scale (Dunlap et al., 2000) further supported convergent validity, consistent with the original study's moderate correlations (*r* = .53 to .76; Walton & Jones, 2018).

It was hypothesized that the Ecological Identity Scale's dimensions (sameness, differentiation, centrality) and overall score would positively correlate with self-transcendence values (Benevolence and Universalism) (Walton & Jones, 2018). This was confirmed, supporting the scale's external validity and equivalence with the original version of scale. Correlations were moderate compared to the original study's (Walton & Jones, 2018) moderate to high values ($r = .54$ to $.81$). Based on previous findings (Walton & Jones, 2018), it was also hypothesized that scores on all Ecological Identity dimensions would negatively correlate with self-enhancement values (Hedonism, Achievement, Power) (Walton & Jones, 2018). This was partially supported because no significant correlations were found between scores on Hedonism and Achievement, but a significant negative correlation was observed with Power values. These results are consistent with the study by Cheung et al. (2014), showing lower ecocentrism and personal norms among those emphasizing these values less. Previous research indicates people with strong self-transcendence values are more likely to form environmental self-identity, while those prioritizing self-enhancement are less likely to form it (van der Werff et al., 2014). Bearing in mind that self-transcendence values emphasize concern for others and the environment, promoting intrinsic motivation for environmental protection (Cheung et al., 2014; Slimak & Dietz, 2006), these results are expected.

It was hypothesized that there would be a statistically significant positive correlation between all the dimensions of the Ecological Identity Scale. It is once again important to note that the authors of the original version of the scale did not calculate interscale correlations (Walton & Jones, 2018). It can be said that this hypothesis was confirmed, meaning that the results support the internal validity. Therefore, these results and conclusions should be taken with caution, as the hypothesis was based on the theoretical framework of the scale, not on empirical data.

The hypotheses regarding the satisfactory reliability of internal consistency for the sameness, differentiation, and centrality dimensions, as well as the scale as a whole, were confirmed.

Limitations

The limitations primarily relate to the sample because the sample was convenient, consisting of a relatively small number of people (146 after excluding respondents), given that this is a validation study. Therefore, the results should be interpreted with caution because this is merely a preliminary study and that further research is necessary.

One notable limitation of the present study concerns the sampling strategy. The use of a convenience sample, with a relatively small number of participants ($N = 146$ after exclusions), limits the generalizability and statistical power of the findings. Consequently, the results should be interpreted with caution. This study should be viewed as an initial step, and further research involving larger and more representative samples is essential to confirm and extend these findings.

Additionally, the sample was uneven in terms of gender, with female respondents predominantly making up the sample. For these reasons, the ability to generalize the obtained data is limited. Certainly, one of the necessary steps for future research is to include a larger, more heterogeneous sample. The recommendation for future researchers is that the sample could include high school students, as well as university students and older adults, in order to examine the differences between groups and to track the intensity of the experience of ecological identity.

Finally, it is important to highlight some limitations of the original study (Walton & Jones, 2018) and the validation study of this scale (Neves, 2021). The psychometric decisions made in the original study are subject to critique. Walton & Jones (2018) applied principal component analysis instead of exploratory factor analysis for dimensional exploration and did not conduct confirmatory factor analysis. Similar methodological concerns are evident in the translated validation study (Neves, 2021) where confirmatory factor analyses initially yielded poor model fit and were subsequently adjusted extensively based on data-driven modifications. Such an approach raises overfitting risks and violates basic principles of confirmatory analysis. Moreover, neither the original study nor the Portuguese adaptation (Neves, 2021) provided compelling evidence for a robust three-dimensional structure. Neves (2021) removed 4 items to show acceptable fit and added correlated residuals. The necessity of specifying different correlated residuals or removing some items across adaptations to attain acceptable model fit undermines the argument for structural equivalence between original and adapted version of scale. Moreover, given the high correlation observed between sameness and centrality, a more parsimonious two-factor model was also tested, but it did not prove to be the most adequate solution, with the note, once again, that neither the original study authors nor those of the validation study (Neves, 2021) reported them. Based on everything, we can say that the reliance on numerous post-hoc modifications across different adaptations to attain acceptable model fit indicates model instability rather than providing evidence of model confirmation. Authors of the original scale suggest that the biggest shortcoming of existing ecological identity operationalizations is considered to be their lack of content validity, however, the question arises as to whether the items from the Differentiation (especially the item: "I identify with large businesses and corporations") constructs are adequate for the domain of ecological identity.

Conclusion

The results obtained in this study indicate that the same number of dimensions showed in both the original and adapted versions of the scale (sameness, differentiation and centrality). Convergent validity was supported by positive correlations between the Ecological Identity Scale scores and both the New Ecological Paradigm Scale and the Revised Ecological Identity Questionnaire. Correlations with self-transcendence values (Benevolence and Universalism) and self-enhancement values (Hedonism, Achievement, Power) partially supported equivalence in the nomological network

between the adapted and original scales. Interscale correlations supported the scale's internal validity, despite the lack of previous interscale correlation for comparison. The scale also demonstrated satisfactory internal consistency reliability.

Although the CFA results indicated that the one-factor model may not be the most adequate representation of the latent structure of the Ecological Identity Scale (despite the possibility of achieving acceptable model fit through minor modifications), the findings suggest stronger correlations with related constructs and external variables when the total score is used, that is, when the scale is treated as unidimensional. Additionally, the correlations between scores on the three individual aspects of ecological identity and the total scale score were high. Moreover, the overall scale also demonstrated satisfactory internal consistency reliability. Considering the above, this preliminary examination suggests that the scale captures three distinct dimensions of ecological identity. As such, it may serve as a useful tool for researchers and applied psychologists aiming to gain a more nuanced understanding of its latent structure. However, it can also be used as a unidimensional measure when a single, comprehensive indicator of ecological identity is sufficient.

This study contributes to understanding why some individuals adopt pro-environmental beliefs, attitudes, and values while others do not. We cautiously conclude that the scale can be used on Serbian samples for scientific research on ecological identity; however, given that this is only a preliminary study, further psychometric evaluation and modification are necessary.

Acknowledgements

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Adaptacija i validacija Skale ekološkog identiteta (Ecological Identity Scale – EIS) na uzorku ispitanika iz Srbije: preliminarna studija

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Apstrakt

Proučavanje ekološkog identiteta je važno jer nam pomaže da razumemo kako i zašto se ljudi odnose prema prirodnom svetu, što ima direktne implikacije na negovanje proekoloških stavova i ponašanja. Cilj ovog istraživanja bio je adaptacija na srpski jezik i ispitivanje psihometrijskih karakteristika adaptirane verzije Skale ekološkog identiteta u odnosu na originalnu verziju skale na uzorku ispitanika iz Srbije. Uzorak je činilo 146 ispitanika ($AS_{starost}$ = 34.21, $SD_{starost}$ = 13.41, $Min_{starost}$ = 18, $Max_{starost}$ = 67) od kojih su 66.4% bile ispitanice ženskog pola. Da bi se ispitala konstruktivna validnost adaptirane verzije skale, korišćena je konfirmatorna faktorska analiza. Dobijeni rezultati ukazuju na to da postoji jednak broj dimenzija koji se izdvaja u okviru originalne i adaptirane verzije skale (Istovetnost, Diferencijacija i Centralnost). Rezultati provere konvergentne validnosti preko računanja mera dobijenim na Skali ekološkog identiteta sa merama dobijenim na Revidiranoj skali ekološkog identiteta i Skale nove ekološke paradigme idu u prilog konvergentnoj validnosti. Nomološka mreža adaptirane verzije skale je ispitana računanjem korelacija između mera dobijenim u okviru Skale ekološkog identiteta i mera dobijenim na vrednostima samoprevazilaženja i samopoboljšanja i rezultati su uglavnom išli u prilog njenoj ekvivalenciji sa nomološkom mrežom originalne verzije skale. Interna validnost skale razmatrana je ispitivanjem međusobnih odnosa njenih mera i ti rezultati idu u prilog ovoj vrsti validnosti. Ova skala je pokazala zadovoljavajuću pouzdanost interne konzistencije na sadašnjem uzorku. Uprkos ograničenjima studije, adaptirana verzija skale se može koristiti za ispitivanje ekološkog identiteta, ali sa određenom dozom opreza i u naučno-istraživačke svrhe radi eventualne modifikacije instrumenta.

Ključne reči: ekološki identitet, Skala ekološkog identiteta, adaptacija, validacija.

The Effects of High-Stakes Versus Low-Stakes Contexts and Item Framing on the Manifestation of Response Styles in Self-Report Questionnaires [1*]

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Abstract

This study examined how situational factors shape four common response styles - extreme responding, acquiescence, disacquiescence, and midpoint responding - using the Representative Indicators of Response Styles (RIRS) approach. Two manipulations were implemented: (a) stakes of the situation (low-stakes vs. high-stakes) and (b) item framing (self-referent vs. other-referent). Data were collected from a sample of adults from Serbia (N = 540) aged 18 to 86 (M_{age} = 38.25; SD_{age} = 15.30) who completed 20 heterogeneous items under both situational conditions. Response style indices were calculated based on recoding procedures, and repeated-measures ANOVAs were used to test main and interaction effects. Results indicated that both acquiescence and extreme responding were significantly stronger under high-stakes instructions compared to low-stakes, though effect sizes were small, likely reflecting the simulated rather than real consequences of the manipulation. By contrast, item framing had a robust impact: self-referent items elicited greater acquiescent, extreme, and disacquiescent responding, whereas other-referent items produced higher midpoint responding. These findings align with self–other knowledge asymmetry, whereby individuals express greater confidence and certainty in judgments about themselves relative to others. Interaction effects of stakes and item framing were generally non-significant, except for disacquiescence, which was more prevalent in low-stakes contexts.

Keywords: Response styles, acquiescence, extreme responding, self-report questionnaires, situational context

The Effects of High-Stakes Versus Low-Stakes Contexts and Item Framing on the Manifestation of Response Styles in Self-Report Questionnaires

Theoretical Framework

Response styles represent the tendency of respondents to answer questionnaire items systematically, regardless of their content (Baumgartner & Steenkamp, 2001). The most widely accepted definition is Paulhus's (1991), which states that a response style is a systematic tendency of respondents to answer questionnaire items not based on the construct the items are intended to measure, but based on different criteria. When completing self-report questionnaires, respondents provide information about their characteristics. However, in addition to this, variations in responses can occur that may result from temporary response tendencies, the testing context, or other stable characteristics of the respondent (Damarin & Messick, 1965; Nisbett & Wilson, 1977). A common feature of the response styles discussed here is that they occur independently of the content of the items in a given questionnaire.

An overview of response styles and their effects on measured constructs is presented in Table 1.

Table 1

Overview of Response Styles and Their Effects

Style	Definition	RP	Consequences	RS
Acquiescence	Tendency to agree with items regardless of their content.	□□□■■	Increases the mean value, strengthens the magnitude of the relationships among variables.	Baumgartner & Steenkamp (2001); Greenleaf (1992b)
Disacquiescence	Tendency to disagree with questionnaire items irrespective of their content.	■■□□□	Lowers the mean value, increases the strength of associations between variables.	Baumgartner & Steenkamp (2001); Stenning & Everett (1984)
Middle-category response style	Tendency to give answers by selecting the midpoint on the rating scale.	□□■□□	Makes the mean values closer to the middle of the scale, reduces variance, and strengthens the magnitude of relationships among variables.	Baumgartner & Steenkamp (2001); Weijters et al. (2008)
Extreme response style	Tendency to choose responses at the extreme poles of the rating scale.	■□□□■	Increases (decreases) the variance of the observed mean values, reduces the magnitude of relationships among variables.	Baumgartner & Steenkamp (2001); Greenleaf (1992b)

Style	Definition	RP	Consequences	RS
Moderate response style	Tendency to avoid responses located at the extreme ends of the rating scale.	□■■■□	Makes mean values closer to the middle of the scale, reduces variance, and increases the strength of relationships among variables.	Hurley (1998); Moors (2008)
Inconsistent responding	Tendency to give responses that are meaningless, random, or careless.		It is not possible to formulate an a priori hypothesis about the effect.	Baumgartner & Steenkamp (2001); Watkins & Chueng (1995)

Note. RP – Response presentation; RS – Respresentative studies; Table adapted from Van Vaerenbergh, Y., & Thomas, T. D. (2013). Response styles in survey research: A literature review of antecedents, consequences, and remedies. *International Journal of Public Opinion Research, 25*(2), pp. 197.

Although six response styles are commonly discussed in the literature, we focused on four: extreme responding, acquiescence, disacquiescence, and midpoint responding. Inconsistent responding was excluded because it reflects careless or random answering rather than a systematic style (Alarcon & Lee, 2022; Arias et al., 2024; Wardell et al., 2014). Similarly, the moderate response style was not analyzed separately, as it conceptually overlaps with the middle-category style: both reflect avoidance of extremes, with midpoint responding representing a specific manifestation of moderation (Hamamura et al., 2008; Kyllonen et al., 2010; Van Herk et al., 2004).

Measuring Response Styles

Regarding the measuring of response styles, two approaches can be distinguished: categorical and dimensional. The categorical approach views response styles as categorical variables. A respondent can possess only one response style, meaning that having one response style excludes having others. Within this approach, response styles are most often measured using latent class confirmatory factor analysis (LCFA) or by applying a mixed Rasch model with latent classes, which are assumed to differ in their response patterns (Austin et al., 2006; Wetzel et al., 2016).[2]

The dimensional approach views response styles as continuous variables on which respondents may differ in the degree to which they exhibit various response styles. Within this approach, response styles can be measured through summative scores (Baumgartner & Steenkamp, 2001; Greenleaf, 1992; Wetzel et al., 2016), modeled using item response theory (IRT)-based methods (Bolt & Newton, 2011, as

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[2] The mixed Rasch model (Rost, 1990, as cited in Kaiser & Keller, 2001) is an extension of the traditional Rasch model. It enables the detection of different performances within latent groups of people. It is used to identify distinct groups based on a set of predictors (items in the test).

cited in Wetzel et al., 2016), or measured through defined pseudo-items for separate subprocesses of the responding process that are either related to the trait being measured or to the response style (De Beuckelaer et al., 2010; Kieruj & Moors, 2013; Wetzel et al., 2016; Zettler et al., 2016).

The approach used in this study is dimensional and based on the calculation of summative scores. This approach is suitable for examining quantitative individual differences in the levels of different response styles. Although there are questionnaires designed exclusively to measure specific response styles (e.g., extreme response style), He and Van de Vijver's (2014) recommendation is that, where research conditions permit, researchers should use multiple measures of a response style to obtain more valid and reliable indices of the response style.

Weijters and colleagues (2008) recommend constructing 10–14 indicators to quantify summative measures of response styles in studies involving response styles. De Beuckelaer and colleagues (2010) argue that at least 15 heterogeneous items should be used to calculate a response style in order to obtain a valid and reliable response style index. This approach has been employed in numerous studies (Baumgartner & Steenkamp, 2001; Greenleaf, 1992; Weijters et al., 2010a) and is known as the Representative Indicators of Response Styles (RIRS) method (Van Vaerenbergh & Thomas, 2013; Weijters et al., 2008).

The RIRS method involves administering a set of items covering maximally different content areas, so that the response style can be calculated from a set of sufficiently heterogeneous items (ideally representing a random sample from the domain of traits covered). In this manner, all response patterns that are a consequence of content or trait variance are canceled out, leaving only the portion of variance originating from the response style (Weijters et al., 2010a). To achieve this, inter-item correlations should be as low as possible. In most studies using this approach, the average correlations among such items ranged from .07 (Greenleaf, 1992) to .12 (Baumgartner & Steenkamp, 2001).

Weijters et al. (2008) recommend that researchers using the RIRS approach include a minimum of 30 items in studies primarily focused on response styles. Conversely, Greenleaf (1992) argues that minimizing correlations among items is a more effective way to achieve a more accurate index of response style than simply increasing the number of items. In practice, items to which respondents provide answers are never completely uncorrelated, and low correlations among items are easier to achieve with a smaller number of items.

These items should not originate from a small number of scales typically used in psychological studies but should be purposefully included in the research design with the aim of detecting response styles, following Weijters and colleagues; they should also originate from a relevant population of items so that findings related to response styles can be generalized to other items (Weijters et al., 2008; Weijters et al., 2010a; Weijters et al., 2010b).

In this study we adopt the RIRS approach.

Situational Factors of Response Styles

As already mentioned, the reasons why respondents may differ in their response styles to items in self-report questionnaires can be dispositional (personality traits, gender, age, etc.) or situational (Baumgartner & Steenkamp, 2001; Paulhus, 1991). Bonarius (1971, as cited in Van der Kloot et al., 1985) argues that a particular response style (in his study, the extreme response style) arises as a reaction to the perceived importance of the stimulus. Paulhus (1991) suggests that a response style can also be a temporary reaction to the demands of the testing situation. Zickar et al. (2004, as cited in Liu et al., 2017) claim that in high-stakes situations—where the respondent can gain or lose something based on test results (e.g., in professional selection contexts)—people may change their response style in order to, for example, create a better impression of themselves. On the other hand, results presented by Ziegler and Kemper (2013) suggest that people use the same response style regardless of the specific situational demands.

The vast majority of research on the effects of low- and high-stakes situations has focused on socially desirable responding. Studies (Li & Bagger, 2006; Paunonen & LeBel, 2012; Galić & Jerneić, 2006; Dodaj, 2012) have shown that socially desirable responding and its quality vary depending on the situation. Since this research focuses on response styles where the primary content of the items should not reflect the response style (and socially desirable responding is considered a response style that reflects the item content) this style will not be examined in this study.

Research by Van der Pligt and Eiser (1984) showed that when rating the traits of others compared to rating oneself, respondents tend to more frequently use response categories indicating uncertainty. In other words, their findings indicate that respondents are less confident in their assessments of other people. In a series of experiments by Rogers et al. (1977) and Kuiper and Rogers (1979), designed to investigate differences in processing information about oneself versus others within the incidental recall paradigm, results consistently showed that self-assessments were rated as easier to perform, and respondents displayed more confidence when making self-assessments compared to judging others. Based on these findings, we expect that response styles may differ in their degree of occurrence depending on whether the items to which respondents respond are formulated to refer to the respondent personally or to other people.

Since research (Galić & Jernejić, 2006; Dodaj, 2012) on the relationships between situational factors and response styles has mostly focused on situational factors leading to socially desirable responding in our cultural context, this study aims to broaden the scope of this issue by examining the relationships of several situational factors with the extreme response style, middle-category response style, acquiescence, and disacquiescence.

The present study aims to investigate the effects of situational factors on the manifestation of response styles in self-report questionnaires. Specifically, it examines differences in four common response styles—extreme response style,

acquiescence, disacquiescence, and middle-category response style—across two situational dimensions: (1) high-stakes versus low-stakes contexts, and (2) item framing referring either to the respondent personally or to other individuals. This research seeks to improve understanding of how these situational variables affect systematic response tendencies independent of item content, thereby contributing to more accurate assessment in survey research.

Method

In the present study, two situational factors were varied, and four response styles were examined. The first situational factor contrasted a high-stakes situation with a low-stakes situation for the respondent. The second situational factor involved whether the respondent answered questionnaire items that referred to themselves personally or to other people. Based on participants' responses, four response styles were calculated. The *extreme response style* was assessed by recoding responses so that only the extreme categories of the rating scale (1 and 5) were coded as 1; the total was then divided by the number of items to yield an overall extreme response style score. The *acquiescence* score was obtained by recoding agreement-indicating categories (4 and 5) as 1 and dividing the sum by the number of items. The *disacquiescence score* was calculated by recoding disagreement-indicating categories (1 and 2) as 1 and dividing the total by the number of items. Lastly, the *middle-category response style* was computed by recoding the middle category of the scale (3) as 1 and dividing the sum by the number of items to determine the overall score for this style.

Instruments

In this study, a questionnaire for assessing response styles was developed specifically for the purposes of this research, consisting of a set of 20 heterogeneous items by content (Pedović, 2020). The procedure for constructing the questionnaire is described below.

Algorithm for Selecting Heterogeneous/Low-Correlated Items Within the RIRS Approach to Calculating Response Styles

The initial item pool used was the PORPOS3 battery administered on a stratified national sample of adult respondents from Serbia ($N = 1225$). This battery was developed and used in the project "Indicators and Models of Harmonizing Family and Work Roles", Ministry of Education, Science, and Technological Development of the Republic of Serbia. It consists of a series of short instruments assessing various

domains of family and work functioning and different personality constructs, as part of a separate, unpublished study at the time of writing.

The item selection process functioned in the following manner. The algorithm constructs a list of heterogeneous/low-correlated items starting from the matrix of inter-item correlations among all candidate items. The first item from the matrix is added to the list. For each subsequent item, the algorithm checks whether its correlations with all items already in the list are below a specified threshold. If the item meets this condition, it is added to the list of heterogeneous/low-correlated items. This check is performed for all items in the matrix.

The number and content of the item list depend on the choice of the initial item and the order in which items are checked. Therefore, the procedure is repeated several million times, starting from a randomized order of items in the correlation matrix.

By increasing the maximum allowed correlation threshold between items, it is possible to obtain a list of the desired length, i.e., with the required number of items. If this procedure yields multiple lists, the one with the lowest average inter-item correlation is selected. This list does not necessarily represent the absolute minimum possible maximum correlation among items, since that would require checking all possible combinations of items in the correlation matrix. For a list of 20 items and a sample of 188 respondents, this would mean checking over 4×10^{26} combinations, which is not feasible in a reasonable time frame. Therefore, the obtained list strictly represents the lowest maximum correlation among items that can be found using this method.

In our sample, the minimum correlation among these selected items was $r = .00$, the maximum $r = .28$, and the average $r = .07$.

To enable comparison of response styles in two different contexts, these sets of items were administered twice within the battery, which is part of a larger study (focused on personality traits and epistemological variables in relation to response styles). The first administration represented a "low-stakes" situation, and the second a "high-stakes" situation. The instruction for the simulated "high-stakes" situation, according to Rogers (1997), should contain a realistic scenario for all participants with a warning designed to discourage obvious faking. The instruction used in our study was a modified version of that used by Ziegler and Kemper (2013) and it reads as follows:

"In front of you is a test similar to those used in the selection of future employees in large companies. Please imagine that such a company has invited you to take a test for a job you have always wanted. Therefore, it is necessary to stand out compared to other candidates, but be careful because an expert will check your results to detect if you were honest in your answers. Your goal is to make a good impression but at the same time avoid being identified as someone who faked their results. By circling the number next to each statement (the meaning of the numbers is given below), indicate the extent to which you agree with them."

For the low-stakes situation, no specific instruction was given, only a basic instruction at the beginning of the questionnaire:

"Please rate the extent to which you agree with each of the statements by circling a number from 1 to 5 on the scale next to each statement. Please be honest; there are no right or wrong answers."

To examine whether response styles differ depending on whether the questionnaire items refer to the respondent personally or to another person, half of the items were reformulated to describe situations involving other people. Respondents indicated their level of agreement with each statement by circling a category on a five-point Likert scale.

Response style scores from this questionnaire were calculated by recoding respondent answers so that responses characteristic of a particular response style were assigned the value *1* and all other responses the value *0* (the recoding procedure was described earlier in the beginning of the Methods section). The values for each respondent's answers were summed and divided by the number of items in the questionnaire (20) to obtain an index for each response style.

Sample and Procedure

The study was conducted using the paper-and-pencil method. The sample consisted of 541 adults from Serbia aged 18 to 86 ($M_{age} = 38.25$; $SD_{age} = 15.30$). Among the participants, 38.4% identified as male ($N = 203$), 61.1% as female ($N = 323$), and 0.6% as other ($N = 3$); 2.2% ($N = 12$) did not report their gender. Each participant was tasked with completing a battery consisting of the questionnaires described in the Instruments section. This battery comprised a total of 151 items, which were part of the aforementioned larger study. Regarding the extreme response style, Hui and Triandis (1989) emphasize that it is more likely to occur at the end of a questionnaire, due to respondent fatigue or boredom. In order to control this and any potential effects of questionnaire order on response styles, the order of questionnaires within the battery was randomized for each participant after the demographic questionnaire.

Data analysis was performed using SPSS 24 (IBM Corporation, 2016) and JASP Version 0.11.1 (JASP Team, 2019). The results of the analyses are presented in the following sections.

Results

Descriptive Statistics

The tables below present descriptive statistics of the response styles measured in different response situations.

Table 2
Description of Extreme Response Style Scores in High- and Low-Stakes Situations

	N	Min	Max	*M*	*SD*	*Sk*	*Ku*
High-stakes situation	541	0	.80	.24	.22	1.06	.75
Low-stakes situation	541	0	.89	.30	.20	0.83	.28

Note. *Sk* = Skewness; *Ku* = Kurtosis.

Table 3

Description of Acquiescence Response Style Scores in High- and Low-Stakes Situations

	N	Min	Max	M	SD	Sk	Ku
High-stakes situation	541	0	1	.40	.15	.17	.16
Low-stakes situation	541	0	1	.42	.14	.17	-.30

Note. Sk = Skewness; *Ku* = Kurtosis.

Table 4

Description of Disacquiescence Response Style Scores in High- and Low-Stakes Situations

	N	Min	Max	M	SD	Sk	Ku
High-stakes situation	541	0	.70	.28	.13	.24	.75
Low-stakes situation	541	0	.60	.33	.12	-.03	.23

Note. Sk = Skewness; *Ku* = Kurtosis.

Table 5

Description of Middle-Category Response Style Scores in High- and Low-Stakes Situations

	N	Min	Max	M	SD	Sk	Ku
High-stakes situation	541	0	1	.32	.17	.41	.32
Low-stakes situation	541	0	.80	.25	.14	.48	.12

Note. Sk = Skewness; *Ku* = Kurtosis.

Table 6

Description of Extreme Response Style Scores in High- and Low-Stakes Situations When Items Refer to the Respondent Personally or to Other People

	N	Min	Max	M	SD	Sk	Ku
High-stakes situation (items refer to the respondent personally)	541	0	1	.30	.25	.57	-.61
High-stakes situation (items refer to other people)	541	0	1	.18	.22	1.55	2.02
Low-stakes situation (items refer to the respondent personally)	540	0	1	.29	.25	.68	-.35
Low-stakes situation (items refer to other people)	540	0	1	.17	.21	.56	2.14

Note. Sk = Skewness; *Ku* = Kurtosis.

Table 7

Description of Acquiescence Scores in High- and Low-Stakes Situations When Items Refer to the Respondent Personally or to Other People

	N	Min	Max	M	SD	Sk	Ku
High-stakes situation (items refer to the respondent personally)	541	0	.90	.43	.18	-.02	-.39
High-stakes situation (items refer to other people)	541	0	.90	.37	.20	.22	-.36
Low-stakes situation (items refer to the respondent personally)	540	0	1	.41	.17	.19	-.01
Low-stakes situation (items refer to other people)	540	0	1	.36	.20	.32	-.13

Note. *Sk* = Skewness; *Ku* = Kurtosis.

Table 8

Description of Disacquiescence Scores in High- and Low-Stakes Situations When Items Refer to the Respondent Personally or to Other People

	N	Min	Max	M	SD	Sk	Ku
High-stakes situation (items refer to the respondent personally)	541	0	.80	.31	.14	.13	-.11
High-stakes situation (items refer to other people)	541	0	.80	.24	.18	.62	-.03
Low-stakes situation (items refer to the respondent personally)	540	0	.80	.32	.15	-.02	-.42
Low-stakes situation (items refer to other people)	540	0	.70	.25	.17	.25	-.22

Note. *Sk* = Skewness; *Ku* = Kurtosis.

Table 9

Description of Middle-Category Response Style Scores in High- and Low-Stakes Situations When Items Refer to the Respondent Personally or to Other People

	N	Min	Max	M	SD	Sk	Ku
High-stakes situation (items refer to the respondent personally)	541	0	1	.25	.23	.76	.60
High-stakes situation (items refer to other people)	541	0	1	.39	.18	.42	-.24
Low-stakes situation (items refer to the respondent personally)	540	0	1	.25	.23	.65	.15
Low-stakes situation (items refer to other people)	540	0	.90	.39	.18	.37	-.33

Note. Sk = Skewness; *Ku* = Kurtosis.

Inferential Statistics

A repeated-measures ANOVA with two within-subject factors - Stakes (low vs. high) and Item framing (self vs. other) - was conducted to examine whether response styles varied depending on situational stakes and the framing of the items. Scores for response styles in high- and low-stakes situations were calculated based on scores from questionnaires constructed specifically for this study, consisting of 20 heterogeneous items with instructions varied to reflect either a low- or high-stakes situation. Scores were calculated for the extreme response style, acquiescence, disacquiescence, and middle-category response style. Half of the items were formulated to refer to the respondent personally, and half of the items' formulations were referring to other people.

Table 10

Results of 2 × 2 Repeated-Measures ANOVA for Stakes (Low vs. High), Item Framing (Self vs. Other) and Their Interaction, N = 540 for Extreme Response Style

Extreme response style	df	F	p	Partial η²
Stakes	1, 539	4.53	.034	.008
Item framing	1, 539	241.27	<.001	.309
Stakes × Item framing	1, 539	0.30	.586	.001

Extreme response style showed significant main effects of Stakes and Item framing, but their interaction was not significant.

Table 11

Results of 2 × 2 Repeated-Measures ANOVA for Stakes (Low vs. High), Item Framing (Self vs. Other) and Their Interaction, N = 540 for Acquiescence

Acquiescence	df	F	p	Partial η²
Stakes	1, 539	4.32	.038	.008
Item framing	1, 539	43.68	<.001	.075
Stakes × Item framing	1, 539	3.69	.055	.007

Acquiescence showed significant main effects of Stakes and Item framing, while the Stakes × Item framing interaction did not reach significance.

Table 12

Results of 2 × 2 Repeated-Measures ANOVA for Stakes (Low vs. High), Item Framing (Self vs. Other) and Their Interaction, N = 540 for Disacquiescence

Disacquiescence	df	F	p	Partial η²
Stakes	1, 539	2.15	.143	.004
Item framing	1, 539	92.10	<.001	.146
Stakes × Item framing	1, 539	4.09	.044	.008

Disacquiescence showed a strong main effect of Item framing, no significant effect of Stakes, and a small but significant Stakes × Item framing.

Figure 1

Interaction Plot of Low-Stakes × High-Stakes by Item framing
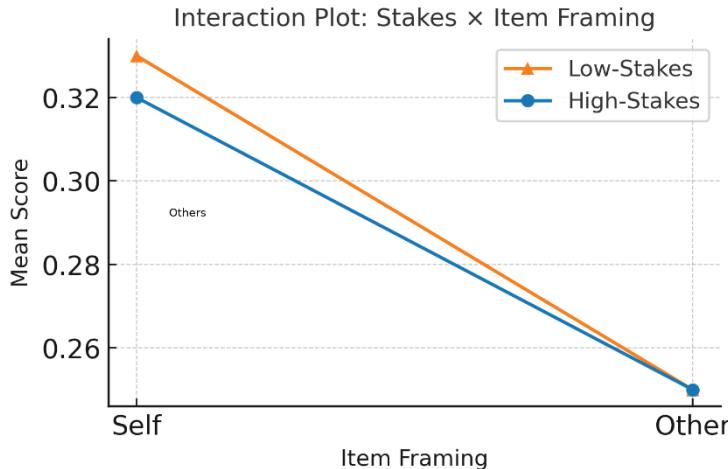
The interaction plot shows that mean scores were higher when participants evaluated themselves compared to others across both stakes' conditions. The self–other difference was slightly larger under the low-stakes condition than under the high-stakes condition.

Table 13

Results of 2 × 2 Repeated-Measures ANOVA for Stakes (Low vs. High), Item Framing (Self vs. Other) and Their Interaction, N = 540 for Middle Category Response Style

Middle category response style	df	F	p	Partial η²
Stakes	1, 539	0.30	.587	.001
Item framing	1, 539	212.66	<.001	.283
Stakes × Item framing	1, 539	0.03	.873	.000

The main effect of Stakes was not significant, indicating no differences across stakes conditions. In contrast, a significant main effect of Item framing was observed. The interaction between Stakes and Item framing was not significant.

Differences in Response Styles Depending on the Situation

Differences in the levels of response styles were examined depending on the situation. To compare response style scores calculated for the low- and high-stakes situations, a paired-samples t-test was used. The results are presented in Table 14.

Table 14

Investigation of Differences in the Levels of Response Styles in Low- and High-Stakes Situations

	LSS		HSS		*t*	*p*	95% CI		*d*
Style	*M*	*SD*	*M*	*SD*			LL	UL	
Extreme response style	.23	.21	.24	.22	-2.13	.03	-.02	.00	-.09
Acquiescence	.39	.15	.40	.15	-2.08	.04	-.01	.00	-.09
Disacquiescence	.29	.13	.28	.13	1.47	.14	.00	.01	.06
Middle-category response style	.32	.17	.31	.17	.54	.59	.00	.01	.02

Note. LSS – Low-stakes situation; HSS – High-stakes situation; CI – Confidence Interval; LL – Lower limit of confidence interval; UL – Upper limit of confidence interval; *d* – Classic Cohen's d coefficient.

The results show that there is a statistically significant difference in the average level of acquiescence and extreme response style between high- and low-stakes situations. Both of these response styles are more pronounced in the high-stakes situation. Although statistically significant, these effects are weak.

The second aspect of the situation examined concerned the formulation of the items presented to the respondents. It was found that there are statistically significant differences in the levels of all examined response styles depending on whether the scores were calculated on items formulated to refer to the respondent personally or on items referring to other people. These differences were first tested in the "low-stakes" situation (Table 15).

Table 15

Investigation of Differences in the Levels of Response Styles When Items Refer to the Respondent Personally (Self) Versus When Items Refer to Other People (Others) in a Low-Stakes Situation

	IFS		IFO		*t*	*p*	95% CI		*d*
Style	M	SD	M	SD			LL	UL	
Extreme response style	.29	.25	.17	.21	14.59	< .001	0.11	0.14	0.63
Acquiescence	.42	.17	.36	.20	5.58	< .001	0.03	0.07	0.24
Disacquiescence	.33	.15	.24	.17	9.70	< .001	0.07	0.10	0.42
Middle-category response style	.25	.18	.39	.23	-13.61	< .001	-0.15	-0.11	-0.59

Note. IFS – Item framing (self); IFO – Item framing (others); CI – Confidence Interval; LL – Lower limit of confidence interval; UL – Upper limit of confidence interval; *d* – Classic Cohen's d coefficient.

All calculated response styles are more pronounced in the situation where the items refer to the respondent personally, except for the middle-category response style, which is more pronounced when calculated on items referring to someone else.

Following this, the existence of these differences was examined in the "high-stakes" situation (Table 16).

Table 16

Investigation of Differences in the Levels of Response Styles When Items Refer to the Respondent Personally (Self) Versus When Items Refer to Other People (Others) in a High-Stakes Situation

	IFS		IFO		t	P	95% CI		d
Style	M	SD	M	SD			LL	UL	
Extreme response style	.30	.25	.18	.22	14.36	< .001	.11	.14	.62
Acquiescence	.43	.18	.37	.20	6.51	< .001	.05	.08	.28
Disacquiescence	.31	.15	.25	.18	187.84	< .001	.05	.08	.34
Middle-category response style	.25	.18	.39	.23	-12.97	< .001	-.15	-.11	-.55

Note. IFS – Item framing (self); IFO – Item framing (others); CI – Confidence Interval; LL – Lower limit of confidence interval; UL – Upper limit of confidence interval; *d* – Classic Cohen's d coefficient.

All calculated response styles in the high-stakes situation are more pronounced when the items refer to the respondent personally, except for the middle-category response style, which is more pronounced when calculated on items referring to someone else.

Discussion

The analyses revealed that acquiescent and extreme response styles were both significantly stronger in the high-stakes condition than in the low-stakes condition, although the effect sizes were small. In other words, when respondents believed the questions were more important, they tended to agree more often and choose the extreme scale points more frequently. Lechner et al. (2019) argue that situational factors such as respondent interest and context influence acquiescent responding. Our results align with these findings: increased interest or perceived importance (high stakes) can amplify agreeable or extreme answering. Notably, results showed these differences were significant, but the effects were weak. This pattern is consistent with the idea that high stakes increase impression-management bias: in demanding contexts, people are more motivated to present themselves favorably. For example, Seitz et al. (2025) note that in high-stakes contexts, test-takers are motivated to respond in a way that enhances their impression. Greater expression of extreme response style in high-stakes situations can be interpreted as individuals intensifying their answers to demonstrate confidence in important contexts. This suggests that, while real high-stakes situations may strongly elicit response biases,

our experimental manipulations (instructions) had a more modest impact, so the observed differences should be interpreted as substantive but not large.

We also examined how item framing affects response style. Items that were self-referential (asking about the respondent personally) elicited stronger response styles than items referring to other people. Specifically, extreme responding, acquiescence, and disacquiescence were all more pronounced when questions were framed about the self, whereas the midpoint/neutral style was higher when questions were about others. This pattern held across both high- and low-involvement conditions. For example, respondents tended to "yea-say" or choose strong options more when evaluating themselves, but they resorted to safer midpoint answers when evaluating others. These findings are consistent with theories of self–other knowledge asymmetry: people typically have more information and confidence about themselves than about others. As one recent study summarizes (Arslan et al., 2020), there are self–other knowledge asymmetries in which individuals know their own traits better than they know those of others. With more self-knowledge, respondents feel more certain and use broader parts of the scale; with less information about others, they hedge more (select midpoints). Overall, the stronger response styles on self-referent items likely arise because respondents are more certain and informed about themselves than about others. As a result, self-related questions lead to more extreme or agreeable responses. In contrast, when reasoning about others, people have less information and are more cautious, boosting mid-point responding. In short, people's confidence in their own self-assessments appears to underlie the observed differences in response styles by item framing.

No significant interaction effects were found between situational stakes (low-stakes vs. high-stakes) and item framing, except in the case of disacquiescence, where the tendency to disagree indiscriminately varied with stakes. Specifically, participants showed greater disacquiescence under low-stakes conditions, consistent with evidence that response styles are more pronounced when assessments have fewer consequences (Navarro-González et al., 2016). The interaction plot further illustrated that participants consistently rated themselves a little more positively than others across both stakes conditions, reflecting the robust self–other evaluation gap (Brown, 2012). This difference was slightly larger under low-stakes than high-stakes conditions, suggesting a modest dampening of self-enhancement when outcomes carry greater importance (Anglim et al., 2018).

An important limitation of this study concerns the nature of the high-stakes manipulation. Although the results showed that response styles such as acquiescence and extreme responding were more pronounced under high-stakes instructions, it is important to note that the high-stakes condition was simulated rather than genuinely consequential. Participants were only instructed to imagine that the situation was important, rather than actually experiencing real-world pressure or consequences. As such, the psychological stakes may not have fully captured the motivational intensity of authentic high-stakes contexts, such as job applications or academic testing. This likely contributed to the small effect sizes observed. While the manipulation was sufficient to elicit statistically significant changes in response styles, the modest magnitude of

effects suggests caution when generalizing findings to real high-stakes environments, where impression management and response distortion may be more pronounced.

Another important limitation of this research concerns the data collection method. The exclusive use of the paper-and-pencil format may limit the generalizability of findings, as prior studies have shown that response styles can differ by administration mode (Weijters et al., 2008). For instance, online surveys have been associated with lower acquiescence and extreme response tendencies (Liu et al., 2017).

Conclusion

This study found that response styles - extreme responding, acquiescence, disacquiescence, and midpoint responding - vary with situational factors. Acquiescence and extreme responding were stronger in high-stakes contexts, though effects were modest, likely due to the experimental setup (Lechner et al., 2019; Seitz et al., 2025). Additionally, items about the respondent personally triggered more extreme and acquiescent responses than items about others, consistent with self–other knowledge asymmetry (Arslan et al., 2020), where people are more certain about themselves and more cautious when judging others.

Overall, the results confirm that response styles are dynamic and context-dependent, influenced both by the perceived stakes of the situation and by how items are framed. These findings highlight the importance of carefully considering situational and item-related factors when interpreting survey responses and measuring psychological constructs.

Acknowledgements

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Efekti konteksta sa visokim i niskim ulozima i formulacije ajtema na ispoljavanje stilova odgovaranja u upitnicima samoprocene

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Apstrakt

Ovim istraživanjem je ispitivano kako situacioni faktori oblikuju četiri uobičajena stila odgovaranja - ekstremno odgovaranje, akviesencija (slaganje), disakviesencija (neslaganje) i odgovaranje srednjom kategorijom - primenom pristupa reprezentativnih indikatora stilova odgovaranja (RIRS). Primenjene su dve manipulacije: (situacija (niski vs. visoki ulozi) i (b) formulacija ajtema (koji se odnose na ispitanika vs. oni koji se odnose na druge osobe). Podaci su prikupljeni na prigodnom uzorku odraslih iz Srbije ($N = 540$), starosti od 18 do 86 godina ($M = 38.25$; $SD = 15.30$), koji su odgovorili na 20 heterogenih ajtema u oba situaciona uslova. Indeksi stilova odgovaranja izračunati su na osnovu procedura rekodiranja, a za testiranje glavnih i interakcionih efekata korišćena je analiza varijanse za ponovljena merenja. Rezultati su pokazali da su i akviesencija i ekstremno odgovaranje bili značajno izraženiji pod instrukcijama sa visokim ulozima u poređenju sa niskim, iako su veličine efekata bile male, što verovatno odražava simulirane, a ne stvarne posledice manipulacije. Suprotno tome, formulacija ajtema imala je robustne efekte: ajtemi koji se odnose na ispitanika lično izazivali su izraženije slaganje, ekstremno odgovaranje i neslaganje, dok su ajtemi koji se odnose na druge osobe proizvodili češće odgovaranje srednjom kategorijom. Ovi nalazi se uklapaju teorijski u asimetriju znanja o sebi i drugima, prema kojoj pojedinci pokazuju veću sigurnost i uverenost u procene sebe nego one koje donose o drugima. Interakcioni efekti uloga i formulacije ajtema uglavnom nisu bili značajni, osim za disakviesenciju, koja je bila izraženija u kontekstu sa niskim ulozima.

Ključne reči: stilovi odgovaranja, akviesencija, ekstremno odgovaranje, upitnici samoprocene, situacioni kontekst

Teachers' Implicit Theories About Giftedness as Multiple Intelligences [1]*

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Abstract

Gifted pupils in school are typically recognized for extraordinary ability or potential in academics, the arts, sports, or leadership. As giftedness can manifest differently, some pupils remain unrecognized. This article explores teachers' implicit theories of giftedness and whether pupils' age influences their implicit theories of giftedness. Data were collected using the Scale for the Assessment of Potential Giftedness of Children and one open-ended question describing the prototype of a gifted child. The scale included 86 items indicating high abilities, motivation, and creativity. This study used items based on Gardner's Theory of Multiple Intelligences. The study included 280 teachers from Montenegro. The results showed which types of intelligence teachers most associated with giftedness. Teachers most frequently recognized linguistic and logical-mathematical intelligence. A factor that is correlated with the teachers' understanding of the nature of giftedness is pupils' age. Primary school teachers valued the indicators of logical-mathematical, bodily-kinesthetic, and artistic intelligence more than secondary school teachers; also, primary school teachers evaluated all intelligences as more significant compared to high school teachers. Secondary school teachers appreciated visual-spatial, bodily-kinesthetic and music intelligence more than high school teachers. The main components of teachers' definitions of giftedness were logical-mathematical and linguistic abilities. Teachers' attitudes are the first step toward creating optimal support, requiring continuous monitoring, multiple assessments of pupils, writing IEPs, and staff training. Therefore, it is important to know how the teachers understand the phenomenon of giftedness.

Keywords: giftedness, implicit theories, teachers, Theory of Multiple Intelligences

Teachers' Implicit Theories About Giftedness as Multiple Intelligences

Implicit Theories of Giftedness

Bruner and Tagiuri (1954) have assumed that everybody creates their implicit theory of personality that is not based on empirical evidence. One of the pioneers of the investigation of implicit theories of intelligence, creativity, and wisdom is Sternberg (1985). He thought that implicit theories helped understand the opinions of a group of people. Furthermore, they influence the development of explicit theories when explicit theories and constructs are not defined enough. Understanding implicit theories of intelligence, creativity, and wisdom in various populations and the relationships between them, the impact of implicit theories on forming perceptions of oneself and others, and the similarity of those perceptions with psychometric data are some of the basic research hypotheses that Sternberg tended to establish. Guided by that, Sternberg conducted four experiments. Subjects mainly perceived intelligence and wisdom as more similar than intelligence and creativity or wisdom and creativity (Sternberg, 1985).

In order to create optimal conditions for the education of gifted pupils, research is now directed toward the study of implicit theories of giftedness and talents, in addition to assessments of one's own giftedness as well as the giftedness of others. The challenge of re-evaluating previous theoretical conclusions and current instruction is posed by the investigation of teachers' implicit theories of giftedness and their capacity to identify the characteristics of gifted students (Vasić & Drobac Pavićević, 2021).

There is a significant range of perspectives on the concept of *giftedness*. To describe adults three or more standard deviations away from the average, in a positive direction, there are terms such as *creativity production* or *creativity*. For children with above-average abilities, there are phrases like *creativity potential* or *giftedness* (Maksić, 2007). If a child is not recognized as gifted, there is a lack of opportunity to get adequate treatment, so it could be assumed that the achievement would be lower than expected (Walker, 2007). Studies show (Maksić, 1995) that teachers seldom characterize children as gifted compared to parents and children's self-assessment. Teachers have especially high standards when their evaluation is based on the subject they teach. The research conducted in Doboj (Vasić & Drobac Pavićević, 2021) points out that teachers identify a hard-working, obedient, and calm pupil who is in symbiosis with the educational system and achieves remarkable success in school and competitions as gifted. However, gifted pupils do not necessarily achieve excellent results. Moreover, gifted underachievers accomplish lower results than other pupils (Jovanović et al., 2010). Teachers' education and experience in working with gifted children define the success of identifying gifted pupils. On the one hand, the assessment conducted by teachers is sometimes unreliable (Blažić & Stanojević, 2014). On the other hand, research (Russell, 2018) shows that teachers are the most important figures for gifted children.

Multiple Intelligences Theory

Gardner (1993) defined intelligence as the ability to solve a problem or create a product that is valued in one or more cultural environments. He developed a thesis on the existence of seven independent abilities: linguistic, logical-mathematical, musical, visual-spatial, bodily-kinesthetic, interpersonal, and intrapersonal (Chen & Gardner, 1998). Each ability is a combination of hereditary and environmental influences (Kodžopeljić & Pekić, 2017).

The Theory of Multiple Intelligences states that all abilities are equally important. That is the difference from the psychometric approach, where the importance of logical-mathematical and linguistic abilities is emphasized. The purpose of assessment is the identification of strengths and weaknesses, which leads to the ultimate aim - the creation of optimal conditions for the development of the capacities of a certain individual (Chen & Gardner, 1998).

Linguistic ability is the competence to use words adequately. Children whose linguistic abilities are developed love reading and writing, they are interested in word games and vocabulary building, and they often read aloud (Armstrong, 2006; Moro, 2013). Logical-mathematical ability is the skill of using numbers, noticing logical connections, and solving problems. Pupils who demonstrate outstanding logical-mathematical ability tend to experiment, assemble puzzles, calculate, test hypotheses, etc. (Armstrong, 2006). Visual-spatial ability pertains to creating mental images, navigating in space, and having a sense of lines, shapes, and color. Pupils with developed visual intelligence like photography, film, learning, and thinking in pictures. They could be good painters (Posavec, 2010; Moro, 2013). Bodily-kinesthetic ability reflects the use of the body to express thoughts or emotions, the ability to maintain balance, speed, coordination, strength, agility, tactile sensitivity, and to create through hands-on activities. Musical ability is the competence to recognize, differentiate, reproduce, create, and combine tones (Armstrong, 2006). Interpersonal or social ability is the skill of recognizing and understanding the moods, emotions, motives, desires, actions, aspirations, and intentions of others (Armstrong, 2006). It manifests through peacefully resolving conflicts, forming and sustaining friendships, as well as through the acceptance of rejection (Kiss & Vučinić, 2021). Additionally, Gardner describes intrapersonal ability as part of personal abilities. The distinguishing feature of personal abilities is the cultural factor (Gardner, 1993, according to Krnjaić, 2017). Intrapersonal ability means the faculty of understanding oneself, one's thoughts, desires, intentions, skills, etc. (Armstrong, 2006). At higher levels, it implies developed introspection and self-reflection (Krnjaić, 2017).

The success of the theory in the educational system was presented through the Zero project (Kornhaber, 1999), which was accepted as a part of the project SUMIT *(School Using Multiple Intelligence Theory)*. The program covered forty-one schools around the world, and it was shown that pupils in those schools achieved higher academic results, and more appropriate governance, as well as those schools, achieved better cooperation with parents compared to schools that were not

included in the program; additionally, the pupils with developmental difficulties had better achievements in schools that were included in SUMIT compared to others (Armstrong, 2006).

Although Gardner's model is not empirically tenable, in this paper, it is viewed as a concept of giftedness, rather than a concept of intelligence (Kodžopeljić & Pekić, 2017; Woolfolk et al., 2014). It was chosen because it is close to the school environment, and the description of abilities largely aligns with school subjects in the educational system of Montenegro. This theory, compared to others, offers much more information to teachers to recognize potential giftedness. For example, information that a child more easily remembers through visual rather than audio material could be important for the child's further progress (Sternberg et al., 2019). Moreover, Gardner (1995) believes that multiple abilities cannot be equal to learning styles. While abilities represent methods of learning and solving problems within a segment, learning style refers to a general approach to any content (Armstrong, 2006). Multiple Intelligences Theory helps teachers recognize what pupils are good at and what they like, examine how to improve existing opportunities, or use developed abilities to influence those less advanced (Armstrong, 2004).

Research data indicates that teachers are unsuccessful in recognizing pupils with advanced musical skills even if they are presented with indicators for identifying giftedness in this area (Svalina et al., 2021). They are a little bit more successful in perceiving artistic giftedness. Research conducted in Croatia shows that only 19.4% of teachers know that a child who is gifted in visual arts draws exceptionally well, and only 35.3% of teachers know that children who are talented in visual arts mostly come from stimulating environments (Ravlić, 2018). The findings of the research (Upadyaya & Eccles, 2014), in which 849 pupils and their teachers took part, show that teachers expect girls would more often possess linguistic giftedness while predicting that boys would be more successful in math problems.

Present Research

The research aim is to determine the main components of teachers' implicit theories of the concept of *giftedness* and indicators based on which teachers recognize a gifted child within the framework of the Multiple Intelligence Theory. It is anticipated that educators will primarily emphasize linguistic and logical-mathematical forms of intelligence in their evaluations. Studies show that it is easier to identify older gifted pupils because they achieve better results than younger children (Letić & Lungulov, 2016). Therefore, we want to examine whether pupils' age is related to the nature of teachers' implicit theories of giftedness.

Method

Sample and Procedure

The study involved 280 teachers employed in 30 schools in Montenegro. The majority of respondents were female ($N = 205$; $f = 73\%$), while the number of male respondents was 75 (27%). A total of 56 respondents were primary school teachers ($f = 20\%$), 118 ($f = 42.14\%$) were secondary school teachers, and 106 were high school teachers ($f = 37.86\%$).

Data collection lasted from December 2022 to May 2023[2]. The schools were selected using a list of random numbers. It was explained that the participation was voluntary and the data would be used for research purposes. The questionnaire was created in two versions - electronic (*Google Forms*) and paper-and-pencil. Respondents could choose the filing method. A total of 101 respondents filled out the questionnaire using an electronic form, and 179 of them chose the other method. The results were processed using the statistical program JASP 17.2.0. The main analyses used in the quantitative part of the study were t-test (i.e., its non-parametric counterpart – the Wilcoxon test) and ANOVA. For the qualitative analysis of questions to describe the prototype of a gifted child, content analysis was used.

Measures

To investigate the teachers' conception of giftedness, **The Scale for Assessing Potential Giftedness of Children (Klarin et al., 2020)** was adopted. The scale was used to measure how much teachers value different abilities as indicators of giftedness and if they equate any specific ability with giftedness itself. The scale has 86 items distributed in 13 subscales: 11 subscales refer to different abilities (linguistic, logical-mathematical, spiritual, musical, bodily-kinesthetic, intrapersonal, interpersonal, technological, dramatic, and attention), one subscale refers to motivation (commitment to the task), and one subscale refers to creativity (Šimić Šašić et al., 2020). Each scale is composed of several indicators designed to represent intelligence, according to Gardner´s theory. For example, item *Possesses an extensive vocabulary* or *Seeks out advanced reading materials* would represent linguistic intelligence. The statement *Demonstrates a more advanced understanding of cause-and-effect connections* is the part of the logical-mathematical scale. An agreement with the items such as *Understands others and their needs* indicates a greater emphasis on interpersonal abilities (Klarin et al., 2020). The change of the scale in this study refers to the modifications of instructions, so the responders had the task of imagining a prototype of a gifted pupil

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[2] The research was conducted as a part of a master's thesis. The Committee for Monitoring Master's Studies, at its session held on 28th of June 2022, approved the topic, and in accordance with Article 22 of the Rules in Postgraduate Studies, proposed the continuation of the procedure. Reference number: 01/3-963/3.

and, following that, evaluating individual items such as those mentioned above. In the original version of the scale, questions were directed to a specific pupil. The scale is Likert-type (1- *completely disagree;* 2 - *partially disagree;* 3 - *neither agree nor disagree;* 4 - *partially agree;* 5 - *completely agree*).

The second part of the questionnaire is open-ended - the respondents had the task of imagining a prototype of a gifted child and describing it. A socio-demographic questionnaire was used to collect data about gender, age, city where they work, subject they teach, the class in which they teach, and workplace (teacher in primary/secondary/high school).

Results

The Kolmogorov-Smirnov test established that the distributions of the variables deviated from normality. Still, the scores of Skewness and Kurtosis do not go out of the range ±1.96, indicating that the distribution is symmetrical. However, the respondents tend to give higher grades on all the scales.

Table 1
Descriptive Statistics Related to the Main Variables

	M	*SD*	Min	Max	*K-S*	*Skewness*	*Kurtosis*
L	4.20	0.69	2.14	5.00	.15***	-0.99	0.31
LM	4.11	0.81	1.56	5.00	.14***	-0.96	0.14
VS	3.94	0.88	1.00	5.00	.17***	-1.12	1.16
Ms	3.62	1.18	1.00	5.00	.16***	-0.96	0.02
BK	3.51	1.18	1.00	5.00	.14***	-0.72	-0.42
Intra	3.77	0.79	1.00	5.00	.11**	-0.78	1.15
Inter	3.80	0.90	1.00	5.00	.11**	-0.80	0.30
Art	3.60	1.14	1.00	5.00	.18***	-0.76	-0.30

Note. L – Linguistic intelligence; LM – Logical-mathematical intelligence; VS – Visual-spatial intelligence; Ms – Musical intelligence; BK – Bodily-kinesthetic intelligence; Intra – Intrapersonal intelligence; Inter – Interpersonal intelligence; Art – Artistic intelligence; * $p < .05$, ** $p < .01$, *** $p < .001$

As suggested by the authors, average values higher than three were observed (Šimić Šašić et al., 2020). This was confirmed on all the scales, indicating that teachers are aware of the components of Gardner's theory as the indicators of giftedness. The average values of logical-mathematical and linguistic scales exceed four, and none of the respondents rated them as an unimportant aspect of giftedness (Table 1). These variables (Tables 2 and 3) are rated statistically significantly higher than others' scores ($p < .01$). Therefore, the criteria for linguistic and logical-mathematical intelligence received the highest scores. When it comes to these two components of giftedness, teachers from the sample assigned higher levels of significance to the linguistic ability than to logical-mathematical ($p < .05$).

The Shapiro–Wilk test was used to assess normality, which is a prerequisite for applying the *t*-test aimed at determining whether teachers rate logical-mathematical and linguistic intelligences significantly higher than other types of intelligence. As

the assumption of normality was violated in all comparisons, the Wilcoxon test was employed as a non-parametric alternative.

Table 2

Wilcoxon Signed-Rank – Assessed Importance of Linguistic Intelligence Indicators as a Component of Giftedness in Comparison to Others

M1	M2	Test	Test value	Z	Effect size
	LM	Shapiro-Wilk	.955***		
		Wilcoxon	19065.00*	1.73	.12
	VS	Shapiro-Wilk	.97***		
		Wilcoxon	23161.00***	5.10	.36
	Ms	Shapiro-Wilk	.93***		
		Wilcoxon	26358.00***	7.44	.53
L	BK	Shapiro-Wilk	.94***		
		Wilcoxon	28513.50***	9.52	.68
	Intra	Shapiro-Wilk	.98***		
		Wilcoxon	28514.00***	8.56	.61
	Inter	Shapiro-Wilk	.97***		
		Wilcoxon	28130.50***	7.96	.56
	Art	Shapiro-Wilk	.96***		
		Wilcoxon	26637.00***	7.97	.57

Note. M1 – measure 1, M2 – measure 2; L – Linguistic intelligence; VS – Visual-spatial intelligence; Ms – Musical intelligence; BK – Bodily-kinesthetic intelligence; Intra – Intrapersonal intelligence; Inter – Interpersonal intelligence; Art – Artistic intelligence. *$p <$ .05, **$p <$ .01, ***$p <$ .001

Table 3

Wilcoxon Signed-Rank - Assessed Importance of Logical-mathematical Intelligence Indicators as a Component of Giftedness in Comparison to Others

M1	M2	Test	Test value	Z	Effect size
	VS	Shapiro-Wilk	.96***		
		Wilcoxon	20112.00***	4.27	.31
	Ms	Shapiro-Wilk	.94***		
		Wilcoxon	23897.00***	7.02	.51
LM	BK	Shapiro-Wilk	.95***		
		Wilcoxon	26025.00***	8.08	.58
	Intra	Shapiro-Wilk	.99***		
		Wilcoxon	24365.00***	5.68	.40
	Inter	Shapiro-Wilk	.98***		
		Wilcoxon	22008.50***	5.24	.38
	Art	Shapiro-Wilk	.95***		
		Wilcoxon	24957.50***	7.63	.55

Note. M1 – measure 1, M2 – measure 2; LM – Logical-mathematical intelligence; VS – Visual-spatial intelligence; Ms – Musical intelligence; BK – Bodily-kinesthetic intelligence; Intra – Intrapersonal intelligence; Inter – Interpersonal intelligence; Art – Artistic intelligence. *$p <$ .05, **$p <$ .01, ***$p <$ .001

Primary school teachers gave the highest rates to all intelligences as the parts of giftedness, while the high school teachers lowest rated all intelligences as the aspects of giftedness (Table 4).

Table 4

Descriptive Statistics Relative to Educational Cycle, i.e., Pupils' Age Teachers Work With

Dependent variable	Educational cycle	N	M	SD
Linguistic intelligence	1	56	4.36	0.62
	2	118	4.22	0.73
	3	106	4.08	0.67
Logical-mathematical intelligence	1	56	4.46	0.54
	2	118	4.10	0.81
	3	106	3.94	0.88
Visual-spatial intelligence	1	56	4.31	0.72
	2	118	4.04	0.77
	3	106	3.65	0.98
Musical intelligence	1	56	4.02	0.86
	2	118	3.71	1.14
	3	106	3.32	1.23
Bodily-kinesthetic intelligence	1	56	4.07	0.87
	2	118	3.66	1.16
	3	106	3.04	1.18
Intrapersonal intelligence	1	56	3.96	0.87
	2	118	3.80	0.79
	3	106	3.63	0.73
Interpersonal intelligence	1	56	3.98	0.91
	2	118	3.85	0.88
	3	106	3.63	0.88
Artistic Intelligence	1	56	4.06	0.79
	2	118	3.66	1.17
	3	106	3.30	1.17

Note. 1 – teachers of primary school; 2 – teachers of secondary school; 3 – teachers of high school.

Homogeneity of the data was tested by Levene's test (Table 5). For some subscales, scores were significant. Therefore, the Brown-Forsythe test was applied as a more robust alternative to ANOVA.

Table 5

Test of Equality of Variances (Levene's) – Variable: Educational Cycle, i.e., Pupils' Age

Dependent variable	F	df1	df2
Linguistic intelligence	1.00	2	277
Logical-mathematical intelligence	8.02***	2	277

Visual-spatial intelligence	4.40*	2	277
Musical intelligence	7.22***	2	277
Bodily-kinesthetic intelligence	3.89*	2	277
Intrapersonal intelligence	0.94	2	277
Interpersonal intelligence	0.11	2	277
Artistic intelligence	7.89***	2	277

Note. * $p < .05$, **$p < .01$, ***$p < .001$

The data reveal that there are notable differences ($p < .01$) in the conception of giftedness between primary, secondary, and high school teachers in terms of logical-mathematical, musical, and artistic abilities. Furthermore, statistically significant differences were identified on the subscales of visual-spatial intelligence and bodily-kinesthetic intelligence, at the $p < .05$ significance level (Table 6).

Table 6

Differences in Teachers' Rating Particular Intelligences as Aspects of Giftedness in Relation to the Educational Cycle, i.e., Age of Students Those Teachers Work With

Homogeneity Correction	Dependent variable	Cases	The sum of Squares	df	F	n^2p
None	L	Pupils' age	2.96	2	3.13*	.02
		R	131.04	277		
Brown-Forsythe	LM	Pupils' age	9.83	2	8.92***	.05
		R	175.12	270.33		
Brown-Forsythe	VS	Pupils' age	17.82	2	13.23***	.08
		R	197.64	244.17		
Brown-Forsythe	Ms	Pupils' age	19.54	2	8.25***	.05
		R	365.57	264.03		
Brown-Forsythe	BK	Pupils' age	43.82	2	19.41***	.11
		R	347.29	267.30		
None	Intra	Pupils' age	4.28	2	3.46*	.02
		R	171.23	277		
None	Inter	Pupils' age	5.26	2	3.34*	.02
		R	218,28	277		
Brown-Forsythe	Art	Pupils' age	22.01	2	12.11***	.06
		R	338.13	273.28		

Note. L – Linguistic intelligence, LM – Logical-mathematical intelligence; VS – Visual-spatial intelligence; Ms – Musical intelligence; BK – Bodily-kinesthetic intelligence; Intra – Intrapersonal intelligence; Inter – Interpersonal intelligence; Art – Artistic intelligence, R – residual *p < .05, **p < .01, ***p < .001

Statistically significant differences between groups were observed on all scales (Table 6), therefore post hoc tests were used (Table 7). Tukey's test was implemented when Levene's test indicated homogeneity of variances (Table 5), while the Games-Howell test was applied to subscales where Levene's test pointed out a statistically

significant result. Primary school teachers assess all intelligences as the components of giftedness higher than high school teachers do. All results are statistically significant at the $p < .01$ level, except for the comparisons on the subscales of personal intelligences and linguistic intelligence, where the level of significance is $p < .05$. From the perspective of significance level at $p < .01$, the difference between primary school teachers' standpoint and secondary school teachers' standpoint about logical-mathematical ability is meaningful. At the $p < .05$ level of significance, differences were also observed on the subscales of bodily-kinesthetic intelligence and artistic intelligence. Additionally, greater importance is attributed to bodily-kinesthetic ($p < .001$), visual-spatial ($p < .01$), and musical ability ($p < .05$) by secondary school teachers compared to high school teachers (Table 7).

Table 7

Post Hoc Test: Comparison of Assessment of Particular Intelligences as Components of Giftedness in Relation to Pupils' Ages Teachers Work With (Educational Cycle)

Dependent variable	Post hoc test	Compared groups		Mean difference	SE	Test value	df
Linguistic intelligence	Turkey	1	2	0.13	0.11	1.18	
		1	3	0.28	0.11	2.43*	
		2	3	0.14	0.09	1.57	
Logical-mathematical intelligence	Games-Howell	1	2	0.36	0.10	3.48**	152.60
		1	3	0.52	0.11	4.60***	156.16
		2	3	0.15	0.11	1.36	214.22
Visual-spatial intelligence	Games-Howell	1	2	0.27	0.12	2.28	115.27
		1	3	0.66	0.14	4.91***	143.17
		2	3	0.39	0.12	3.30**	199.44
Musical intelligence	Games-Howell	1	2	0.31	0.16	2.01	138.91
		1	3	0.70	0.17	4.13***	151.34
		2	3	0.39	0.16	2.39*	210.57
Bodily-kinesthetic intelligence	Games-Howell	1	2	0.40	0.16	2.57*	141.03
		1	3	1.03	0.17	6.31***	143.75
		2	3	0.62	0.16	3.97***	218.63
Intrapersonal intelligence	Turkey	1	2	0.17	0.13	1.13	
		1	3	0.33	0.13	2.57*	
		2	3	0.17	0.10	1.60	
Interpersonal intelligence	Turkey	1	2	0.13	0.14	0.89	
		1	3	0.35	0.15	2.40*	
		2	3	0.22	0.12	1.89	
Artistic intelligence	Games-Howell	1	2	0.99	0.15	2.65*	151.84
		1	3	0.76	0.16	4.92***	150.84
		2	3	0.36	0.16	2.32	219.24

Note. $* p < .05, ** p < .01, *** p < .001$

Finally, participants were asked to describe the prototype of a gifted child in order to identify the main abilities and characteristics that a gifted child possesses. Out of 280 respondents, the last question was answered by 226 ($f = 80.72\%$). Two respondents ($f = 0.88\%$) gave answers related to the characteristics of the survey, while ten subjects ($f =$

4.42%) provided answers that did not correspond to the question posed. Answers given by 214 participants were encompassed by the qualitative analysis K ($f = 76.43\%$). In the subsequent statements, the previously mentioned number (214) is regarded as the sample ($f = 100\%$). If a subject mentioned more than one item referring to the same component, in this part of the analysis, each item was coded.

The most frequent responses indicate the presence of logical-mathematical abilities. A total of 84 sentences or phrases referring to logical-mathematical abilities were abstracted. The teachers consider that gifted students think quickly ($f = 15$), reason logically ($f = 27$), connect old knowledge with new or with facts from different areas ($f = 11$), solve mathematical problems ($f = 9$), think abstractly ($f = 6$), formulate problems ($f = 1$), and understand cause-effect relationships ($f = 1$). Linguistic abilities are also frequently mentioned ($f = 41$). Explanations assume a rich vocabulary ($f = 16$), the ability to extract information from specific areas of interest ($f = 9$), a love of reading ($f = 4$), the ability to define concepts ($f = 1$), and early development of reading and speech skills ($f = 1$). Comments that refer to social skills are classified under interpersonal ($f = 49$) and intrapersonal ($f = 14$) abilities. The following indicators of developed interpersonal skills were most often mentioned: empathy ($f = 9$), humanity ($f = 8$), sociability ($f = 7$), communicativeness ($f = 4$), team worker, leader, and the favorite child. An expression of intrapersonal abilities includes: striving toward personal goals ($f = 14$), developed introspection ($f = 3$), a well-formed identity ($f = 2$), high emotional intelligence ($f = 2$), and high self-esteem ($f = 1$). Skills in physical activities and sports were abstracted from nine responses. They mostly mentioned energy ($f = 4$), while love for sports, developed sensorimotor abilities, talent for sports, or skills in physical activities were each noted in one response. Less frequently mentioned were indicators of visual-spatial and musical abilities - love for music ($f = 1$) and possession of talent ($f = 1$). Within visual-spatial ability, good spatial orientation and talent for painting were highlighted. Thus, one respondent emphasized that their answer referred to visual arts, while in the remaining responses ($f = 6$), there was no indication whether "art" referred to the arts in general or to a specific segment.

Table 8

The Frequency of Referencing Intelligence Indicators in Responses - Comparative Analysis by Pupils' Age Teachers Work With

		L (41 in 32; 14.95%)	LM (84 in 52; 24.30%)	Ms (8 in 8; 3.74%)	VS (7 in 7; 3.27%)	BK (8 in 6; 2.8%)	Inter (48 in 34; 15.89%)	Intra (18 in 15; 7.01%)
Edu	1	8 (14.29%)	12 (21.43%)	1 (1.79%)	0	0	9 (16.07%)	3 (5.36%)
	2	13 (11.02%)	18 (15.25%)	4 (3.39%)	4 (3.39%)	2 (1.69%)	7 (5.93%)	5 (4.24%)
	3	11 (10.38%)	22 (20.75%)	3 (2.83%)	3 (2.83%)	4 (3.77%)	18 (16.98%)	7 (6.60%)

Note. Edu – Educational cycle; L – Linguistic intelligence; LM – Logical-mathematical intelligence; Ms – Musical intelligence; VS – Visual-spatial intelligence; BK – Bodily-kinesthetic intelligence; Inter – Interpersonal intelligence; Intra – Intrapersonal intelligence. Pupils' age: 1 – teachers of primary school (42/56-75%); 2 – teachers of secondary school (86/118 – 72, 88%); 3 – teachers of high school (86/106 – 81, 13%).

The data (Table 8) show that primary school teachers more frequently cite indicators of linguistic and logical-mathematical abilities compared to other respondents, while they assess interpersonal abilities similarly to high school teachers, but they describe them as more significant than how it is mentioned by secondary school teachers.

Some teachers provided responses that could not be classified under any of Gardner's categories, such as: "The child sometimes feels lonely and as if no one understands them, without knowing the reason why" as well as myths about gifted children *(has difficulty fitting into everyday activities; well-mannered/cultured; a good and honest child; brave; an optimist,* etc.), and descriptions of physical appearance.

Discussion

According to the preceding points, it can be concluded that the possession of linguistic and logical-mathematical abilities are the primary criteria used by educators to nominate students as gifted, which can be linked to the more evident expression of these abilities within the educational system (Chen & Gardner, 1998). When given predefined answers, primary school teachers gave the highest scores across all subscales (different intelligences according to Gardner's model of multiple intelligence) as the aspects of giftedness, followed by slightly lower scores from secondary school teachers, while high school teachers gave the lowest average scores across all subscales. This creates the impression that the younger the students are, the more all groups of indicators are included into the teachers' concept of giftedness. Primary school teachers rated the logical-mathematical ($p < .01$), bodily-kinesthetic, and artistic abilities ($p < .05$), as the part of giftedness higher than secondary school teachers. They also gave more significant evaluations of all abilities compared to high school teachers. Furthermore, visual-spatial ($p < .01$), bodily-kinesthetic ($p < .01$), and musical abilities ($p < .05$) are more highly valued by secondary school teachers than by high school teachers. These differences are opposite to those found in previous research, which showed that teachers are more likely to recognize indicators of giftedness in older students (Blanuša et al., 2019, as cited in Barzut et al., 2020; Nikolić, 2017). It turned out that the amount of time primary school teachers spend with students is more significant, as it is greater than the time spent with students by subject teachers. More time allows for greater freedom in teaching, which also influences their creativity during lessons. These findings are not consistent with the data obtained from the qualitative analysis, which showed that primary school teachers value only linguistic and logical-mathematical abilities more than other respondents. Additionally, primary school teachers and high school instructors mentioned more indicators of interpersonal abilities compared to secondary school teachers. Differences between the groups on the linguistic and interpersonal abilities scales were not confirmed by quantitative analysis.

Quantitative data can create the illusion of a more positive image of teachers' implicit theories of giftedness because of the fact that respondents' answers are influenced by the provided materials. The available indicators offer many options for assessment. The data obtained through qualitative analysis are considered more significant. A total of 214 out of 280 respondents answered the question. Indicators of logical-mathematical abilities appeared in 24.30% of responses, interpersonal in 15.89%, and linguistic in 14.95% of responses. It should be taken into account that the respondents answered the question after completing the section in which they were presented with indicators for all abilities. Maybe it could be considered a thesis that the mere absence of a response indicates a lack of understanding of the topic.

In the respondents' answers, traces of traditional educational values were observed. For example, a gifted student is described as a child who is well-behaved, honest, obedient, neat, and respectful of norms and elders. Some responses also include characteristics of introversion, highlighting it as being closely related to giftedness. Therefore, giftedness is sometimes equated with strict upbringing which is from the perspective of the authors of this paper, scientifically debatable. Nevertheless, it is a fact that giftedness is more easily recognized in quiet and obedient students (Walker, 2007). Teachers often emphasize cooperativeness and excellent academic performance. Similar conclusions are drawn by Altaras (2006). Additionally, some responses describe attitudes toward life, such as optimism, cheerfulness, and courage, reflecting personality traits. Among the unexpected responses are those that reflect physical characteristics. It is assumed that the cause of such misunderstandings may lie in being overwhelmed by bureaucracy and daily responsibilities, which leads to a lack of regular reading of literature and following scientific developments among educators. Some respondents highlight independence as a trait of gifted children, and they frequently use the term "their own" as a descriptor. This suggests the conclusion that an unrealistic level of autonomy is expected from such students, which aligns with the existing myth about the extreme independence of gifted individuals - so much so that they do not need adult support (Walker, 2007).

The integration of qualitative and quantitative analysis in the data processing provides a comprehensive understanding of teachers' implicit theories about giftedness as multiple intelligences. In Gardner's view, intelligence is not defined as abilities, despite the common practice of equalizing these concepts (Armstrong, 2006). Gardner's concept of intelligence is complementary to Montenegrin educational system, which is structured around subjects that could be readily aligned with Gardner's proposed intelligences, such as Math with logical-mathematical intelligence, Music education with musical intelligence, and others of the same kind. In light of the lack of empirical validation, the adoption of this concept was deemed appropriate for addressing various forms of giftedness.

Conclusion

The findings indicate a lack of homogeneity of the implicit theories of giftedness in teachers working with different aged students. Certain responses to the final question indicate a lack of understanding of the concept of giftedness, in contrast with the quantitative data that shows predominantly high scores across all indicators. While in the quantitative analysis primary school teachers always tend to provide higher ratings compared to other teachers, the qualitative analysis does not lead to the same conclusion. The data concerning the level of agreement between secondary and high school teachers also shows inconsistences. For example, in the quantitative part of the test, secondary school teachers tend to assign higher ratings to bodily-kinesthetic intelligence compared to high school teachers, while the analysis of the last question indicates that a greater number of indicators are mentioned by high school teachers. However, some conclusions are consistent. For instance, logical-mathematical and linguistic intelligence are valued the most as indicators of giftedness.

It would be important to identify additional factors that influence teachers' assessments of particular aspects of students' giftedness. One possible factor is the teachers' professional orientation or maybe teachers' expectations regarding students' achievement. Teachers face a demanding task that requires theoretical knowledge, dedication to each student, curriculum monitoring, and the creation of a supportive classroom atmosphere. Therefore, in order to more accurately identify and support gifted students, it would be necessary to implement purposeful teacher training. Identifying gifted students (which is naturally partly based on teachers' implicit theories of giftedness) is only the initial step in guiding their development and providing appropriate support. The ideal solution would involve multiple assessments that are discriminative but not discriminatory, continuous observation of students, data recording, and, based on that, enabling an individualized educational program, differentiated content, and the creation of a stimulating learning environment.

Acknowledgements

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Implicitne teorije nastavnika o darovitosti kao višestrukim inteligencijama

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Apstrakt

Daroviti učenici u školi obično se prepoznaju kao oni koji pokazuju izvanredne sposobnosti ili potencijal u akademskim predmetima, umjetnosti, sportu ili liderstvu. Darovitost se može ispoljiti na različite načine, što ponekad dovodi do neprepoznavanja kod svih učenika. Cilj ovog rada je ispitati implicitne teorije nastavnika o darovitosti i da li uzrast učenika sa kojima rade ima efekta na implicitne teorije nastavnika o darovitosti. Podaci su prikupljeni *Skalom za procjenu potencijalne darovitosti kod djece* i kroz jedno pitanje otvorenog tipa kojim je zahtijevan opis prototipa darovitog djeteta. Skala se sastoji od 86 tvrdnji koje predstavljaju indikatore visokih sposobnosti, motivacije i kreativnosti. Za potrebe ovog rada koristili smo ajteme koji se odnose na Gardnerovu teoriju višestrukih sposobnosti. U istraživanju je učestvovalo 280 ispitanika iz Crne Gore. Rezultati pokazuju koje vrste inteligencije nastavnici povezuju sa darovitošću. Utvrđeno je da učitelji i nastavnici više vrednuju ligvističku i logičko-matematičku inteligenciju kao komponente darovitosti u poređenju sa ostalim vrstama inteligencije. Faktor koji je povezan sa shvatanjem prirode darovitosti je uzrast učenika sa kojima nastavnici rade. Učitelji kao pokazatelje darovitosti više vrednuju logičko-matematičke, tjelesno-kinestetičke i likovne sposobnosti u poređenju sa nastavnicima osnovnih škola. Takođe, procijenili su kao značajnije sve inteligencije u odnosu na nastavnike srednjih škola. Vizuelno-spacijalnu, tjelesno-kinestetičku i muzičku sposobnost više uvažavaju nastavnici osnovnih od nastavnika srednjih škola. Nastavnici teže da pojedinim vrstama inteligencije kao komponentama darovitosti daju više ocjene na Likertovoj skali u poređenju sa tim kako odgovaraju na pitanja otvorenog tipa. Ipak, glavne komponente njihovih definicija inteligencije su logičko-matematičke i lingvističke sposobnosti u oba slučaja. Procjena stavova nastavnika je tek prvi korak u kreiranju optimalnih uslova koji podrazumijevanju kontinuirano praćenje i višestruku procjenu učenika, pisanje IOP-a, obuke nastavnog kadra. Stoga je važno znati kako nastavnici razumeju koncept darovitosti.

Ključne riječi: darovitost, implicitne teorije, nastavnici, teorija višestrukih sposobnosti

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Attachment as a Predictor of Adolescent Mental Health [1][*]

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Abstract

The aim of this study was to examine and analyze the role and significance of attachment dimensions (anxiety and avoidance) in predicting adolescent mental health, as well as the predictive significance of sociodemographic factors. The study was conducted on a sample of 294 participants (75.2% female; 24.8% male) aged between 15 and 21 years ($M = 19.24$, $SD = 1.71$). For the purposes of the research, the Family Attachment Questionnaire and the Mental Health Inventory were used. The results showed that dimensions of attachment and key sociodemographic factors significantly contribute to predicting both positive and negative mental health in adolescents, but with different signs. Low avoidance ($\beta = -.22$), higher perceived family economic status ($\beta = .13$), and male gender ($\beta = -.14$) were associated with higher positive mental health, while high levels of dimensions anxiety ($\beta = .28$) and avoidance ($\beta = .20$), along with female gender ($\beta = .21$), were linked to higher negative mental health. The results indicate that adolescent mental health is linked to representations of the self and others formed in early relationships with primary figures. Adolescents with a positive model of self and others exhibit better mental health compared to those with a negative view of themselves and others. Additionally, the findings indicate that relational and contextual factors are associated with psychological well-being.

*Keywords***:** Mental health, attachment, adolescence, gender, perceived family economic status

Attachment as a Predictor of Adolescent Mental Health

Adolescence is a critical period for studying mental health, as the changes that occur during this stage have a profound and lasting impact on an individual's personal and social functioning. Most mental disorders first emerge during adolescence, prior to the transition into adulthood. According to the study by Merikangas et al. (2010), the prevalence of mood disorders among adolescents nearly doubles from ages 13-14 to 17-18, affecting 14.3% of the sample, and nearly one in three teens (31.9%) meets criteria for an anxiety disorder. Furthermore, data from the 2017 survey indicate an upward trend in the prevalence of emotional disorders, including anxiety and depression, among children aged 5 to 15 years, increasing from 3.9% in 2004 to 5.8% in 2017, with higher rates observed in girls and older adolescents (Sadler et al., 2018). These findings highlight the importance of identifying factors that contribute to both positive and negative mental health, in order to develop preventive strategies and effective interventions aimed at young people.

One of the key factors in maintaining mental health during adolescence, when emotional needs become particularly pronounced, is the quality of relationships with parents and other close individuals. In this context, attachment theory provides a valuable theoretical framework for understanding the causes of mental health difficulties. John Bowlby (1988), the founder of attachment theory, emphasized that secure emotional bonds with parents or primary caregivers are essential for healthy psychological development. These bonds, first formed with parents or parental substitutes in early life and later extended to new relationships in adolescence and adulthood, are central to effective personality functioning.

Therefore, this paper will analyze the role and significance of attachment in predicting adolescent positive and negative mental health.

Attachment and Mental Health

Mental health represents a core aspect of overall well-being, encompassing emotional stability, the absence of chronic anxiety, prosocial behavior, self-control, a sense of personal competence, openness to new experiences, and adaptability, all of which contribute to a positively integrated personality (Brlas, 2014). A key factor in mental health is the ability to cope with threats and develop resilience. Attachment theory provides a framework for understanding how close emotional relationships foster adaptive flexibility, with secure attachment supporting, and insecure patterns potentially hindering psychological adaptability (Johnson, 2021). Well-established relationships with trusted individuals create an "ecological niche" for the development of the brain, nervous system, and behavioral patterns, highlighting the theoretical and methodological significance of attachment in interpreting mental health (Johnson, 2021).

Attachment behavior is active throughout the lifespan and plays a vital protective role, making it misleading to interpret such needs in adulthood as signs

of pathology or regression. Disturbances in attachment patterns, such as heightened anxiety or the deactivation of attachment behavior reflect developmental pathways that deviate from healthy functioning. These maladaptive patterns are closely linked to vulnerability for psychopathology, underscoring the importance of secure emotional bonds for maintaining mental health (Bowlby, 1980).

To operationalize this concept and make it accessible for empirical research, Kim Bartholomew (1990, as cited in Stefanović-Stanojević, 2005) developed a model based on Bowlby's assumption of the existence of models of self and others, identifying two key dimensions: the dimension of avoidance (relating to the model of others) and the dimension of anxiety (relating to the model of self). The avoidance dimension describes the capacity for emotional closeness and represents the working model of others, while the anxiety dimension highlights characteristics of ambivalent attachment, such as intense concern about love, fear of abandonment, and excessive need for closeness. Based on the intersection of these dimensions, Bartholomew formulated four attachment styles: secure, preoccupied, dismissive, and fearful (Stefanović-Stanojević, 2005).

Internal working models, shaped by early attachment experiences, guide children's adaptation to social environments and influence interpersonal behavior, expectations, and coping strategies later in life (Popadić, 2016). They also regulate stress: securely attached individuals manage stress effectively with balanced appraisal and emotion regulation, while insecure attachment, either avoidance or anxiety, can lead to emotional difficulties and heightened distress, underscoring attachment's role in psychological resilience (Shaver & Mikulincer, 2007).

Empirical research consistently confirms the link between attachment patterns and mental health outcomes. Individuals with a secure attachment style show lower levels of depression and generalized anxiety symptoms, as well as better emotion regulation, whereas insecure attachment is associated with higher symptoms and greater difficulties in regulating emotions (Marganska et al., 2013). Secure attachment is associated with greater psychological resilience and better mental health, as shown by theoretical analyses and empirical reviews indicating that a sense of safety and security in close relationships buffers individuals against existential threats such as isolation, meaninglessness, and lack of autonomy (Shaver & Mikulincer, 2012). Secure attachment not only contributes to individual psychological growth but also positively influences interpersonal relationships. Individuals with this attachment style tend to demonstrate sensitivity, empathy, compassion, openness, and the capacity for altruistic behavior, reflecting the buffering and regulatory role of secure attachment in promoting supportive and prosocial interactions (Mikulincer & Shaver, 2016).

In contrast, attachment insecurities are associated with a wide range of mental disorders, from mild negative affectivity to severe and disorganizing personality disorders. Evidence suggests that both anxious and avoidant attachment orientations function as general vulnerability factors for psychological disturbances (Mikulincer & Shaver, 2012). Specifically, insecure attachment, including both attachment anxiety and avoidance, is associated with higher depressive symptoms in young

adults (Yang et al., 2024). Individuals with insecure attachment styles often show heightened anxiety, preoccupation with personal distress, limited empathy, and difficulties in forming and maintaining interpersonal relationships. These attachment orientations increase vulnerability to depression and other stress and anxiety related disorders. Specifically, anxious attachment is associated with feelings of loss, loneliness, abandonment, and helplessness, while avoidant attachment tends to involve achievement-oriented depression, perfectionism, self-criticism, and compulsive self-reliance (Mikulincer & Shaver, 2016).

Based on the above, it can be concluded that individuals with a secure attachment style exhibit emotional balance, the ability to form quality interpersonal relationships, and a healthier relationship with themselves and others, all of which contribute to better mental health, adaptability, and a greater capacity for establishing close bonds (Johnson, 2021). However, adolescent mental health is shaped not only by attachment but also by sociodemographic factors. Evidence on gender differences is mixed: some studies indicate that males tend to exhibit higher levels of positive mental health (Campbell et al., 2021; World Health Organization [WHO], 2002), while others find no significant differences, with both genders generally displaying moderate or low mental health (Vuletić et al., 2018). Additionally, perceived family economic status appears to be important, as adolescents from more financially secure households generally report higher levels of mental well-being (Yang et al., 2022). Integrating these sociodemographic variables with attachment dimensions offers a more comprehensive framework for understanding the factors that shape adolescent mental health.

Research Framework

Secure, emotionally supportive relationships from infancy through adulthood are essential for human development. Attachment, understood as a behavioral system aimed at establishing and maintaining closeness with significant others (Popadić, 2016), shapes internal working models that guide expectations, emotions, and behaviors. Secure attachment fosters resilience, positive self-perception, and adaptive coping, whereas insecure attachment promotes negative self-views and a threatening outlook on the world, increasing vulnerability to psychological difficulties (Bowlby, 1988; Slavković, 2020).

Mental health in this research is conceptualized through two primary dimensions: positive and negative mental health. Positive mental health reflects behaviors, attitudes, and emotions associated with personal effectiveness and satisfaction, whereas negative mental health encompasses adverse emotional states such as sadness, disappointment, and anger (Kumar & Ahmad, 2019).

Adolescence represents a particularly sensitive period for these processes. Psychological separation from parents is one of its central developmental tasks, and the success of this transition depends largely on the quality of early attachment (Popadić, 2016). In addition to attachment, previous research has explored sociodemographic

determinants of adolescent mental health. Research shows that the gender gap in adolescent mental health is largely cross-cultural, with girls exhibiting worse average mental health than boys (Campbell et al., 2021). Additionally, adolescents with lower socioeconomic positions tend to have poorer mental health than those with higher socioeconomic status, even in countries with relatively low social inequalities, such as Slovenia (Jeriček Klanšček et al., 2014). Similarly, findings from China indicate that family socioeconomic status has a significant positive effect on adolescent mental health (Yang et al., 2022).

Drawing on this theoretical background, the present study examines the relationship between attachment and adolescent mental health. The specific aim was to analyze the role of attachment dimensions (anxiety and avoidance) in predicting adolescent mental health, as well as to examine the predictive significance of key sociodemographic factors, namely gender and perceived family economic status. Accordingly, the hypothesis is that the dimensions of attachment (anxiety and avoidance) and selected sociodemographic variables (gender and perceived family economic status) are statistically significant predictors of adolescent mental health.

Method

Sample and Procedure

The sample consisted of 294 participants, 221 (75.2%) female and 73 (24.8%) male, aged 15 to 21, with an average age of 19.24 ($SD = 1.71$). They came from a variety of residential settings: 170 (57.8%) lived in a city, 59 (20.1%) in a small town, and 65 (22.1%) in a village. Regarding educational level, 78 participants (26.5%) were high school students (from first to fourth grade), while the majority, 216 participants (73.5%), were university students (from the first year to the master's program). Participants also reported their perceived family economic status, which ranged from 1 (weak) to 3 (good), with a mean score of 2.63. The majority described their economic status positively 210 (71.4% as good), while 58 (19.73%) rated it as average and 26 (8.84%) as weak. The study was conducted online using the Google Forms platform during the period of February to April 2022.

Measures

Questionnaire on Sociodemographic Characteristics. The questionnaire for examining sociodemographic characteristics was created for the purposes of this research and consists of five questions relating to gender, age, perceived family economic status, place of residence, and level of education.

Family Attachment Questionnaire (Brenan et al., 1995, as cited in Stefanović-Stanojević, 2011). The questionnaire consists of 18 seven-point Likert-type items that refer to feelings in family relationships. It is constructed in a way that

nine items measure *the anxiety dimension*, while the remaining nine items measure *the avoidance dimension*. *The anxiety dimension* represents the internal working model of the self. On the positive end, it reflects an internalized sense of self-worth, while the negative end indicates anxiety and rejection of closeness. *The avoidance dimension* represents the internal working model of others. The positive end of this dimension indicates acceptance of closeness and trust in others and their support, whereas the negative end indicates a degree of non-acceptance and avoidance of closeness. In this study, the reliability of the overall scale was α = .82. *The avoidance dimension* demonstrated a reliability of α = .90, while *the anxiety dimension* showed a reliability of α = .76.

Mental Health Inventory (MHI-38; Veit & Ware, 1983, as cited in Brdar, 2016). The inventory contains 38 statements that examine both aspects of mental health - *positive* and *negative mental health*. The instrument was created to assess mental health in both clinical and non-clinical populations. The results for each subscale are determined by summing the responses to the statements, where higher scores indicate a greater expression of the respective dimension. In terms of reliability, the internal consistency coefficient for the entire inventory is α = .93. The reliability of *the negative mental health* subscale is α = .94, and for *the positive mental health* subscale it is α = .92, indicating good instrument reliability (Heubeck & Neill, 2000, as cited in Brdar, 2016). In this study, the reliability of *the negative mental health* subscale was α = .95, and for *the positive mental health* subscale, α = .90. These results indicate that the inventory demonstrated good reliability in the current sample.

Statistical Analysis

The data in this research were analyzed using the statistical software package SPSS 30.0.0.0 (trial version). Data processing procedures were selected in accordance with the applied methodology and the distribution of the obtained data. Descriptive statistical procedures were used to describe the research sample (measures of central tendency and measures of dispersion). Additionally, further procedures were conducted to test the basic assumptions for conducting regression analysis. Accordingly, multicollinearity was assessed using collinearity diagnostics (variance inflation factor and tolerance) and through a correlation matrix. To examine the predictive significance of the predictors, standard multiple regression analysis was employed.

Results

Table 1 presents the descriptive values of the distributions on the scales used in the study. Based on the obtained results, it can be concluded that the measures of skewness and kurtosis fall within the range of 1, which indicates that the deviation from normal distribution is not of such intensity as to question the use of parametric statistics.

Table 1

Descriptive Indicators

Variables	M	SD	Min	Max	Range	Sk	Ku
Dimension Anxiety	24.68	9.53	9.00	57.00	48.00	0.61	0.09
Dimension Avoidance	28.13	12.95	9.00	62.00	53.00	0.49	-0.70
Positive mental health	48.11	13.31	19.00	84.00	65.00	0.20	-0.63
Negative mental health	59.89	18.70	19.00	109.00	90.00	0.14	-0.72

Note. Sk = Skewness, *Ku* = Kurtosis

In order to examine the assumption of no multicollinearity, the correlation between variables was tested. Based on the presented results in Table 2, it can be concluded that there is a statistically significant negative correlation of weak intensity between the dimensions of attachment (anxiety and avoidance) and positive mental health, as well as a statistically significant positive correlation of weak to moderate intensity between the dimensions of attachment (anxiety and avoidance) and negative mental health. Gender showed a weak but statistically significant negative correlation with positive mental health and a weak positive correlation with negative mental health, while perceived family economic status demonstrated a weak positive correlation with positive mental health and a non-significant correlation with negative mental health. The assumption of no multicollinearity was further confirmed, as the tolerance values were not below 0.10, the variance inflation factor (VIF) values did not exceed 10, and none of the correlations exceeded the commonly accepted threshold of 0.7, indicating that multicollinearity is not a concern in the present analysis.

Table 2

Intercorrelations Between Predictor Variables and Criterion Variables (Positive and Negative Mental Health) (Pearson r)

Variables	PFES	Anxiety	Avoidance	PMH	NMH
Gender	-.03	.27**	-.05	-.16**	.27**
PFES		.05	-.18**	.17**	-.05
Anxiety			.08	-.14*	.35**
Avoidance				-.24**	.21**
PMH					-.77**
NMH					

Note. PFES = Perceived family economic status; PMH = Positive mental health; NMH = Negative mental health; **p* < .05; ***p* < .01

Table 3 presents the results of the standard multiple regression analysis examining the predictors of positive mental health.

Table 3

Results of a Standard Multiple Regression Analysis Examining the Predictors of Positive Mental Health

Criteria variable	Model	Predictors	β	t	p
Positive mental health	**Model 1** $R^2 = .05$ $F = 8.02$ $p < .01$	Gender	-.16	-2.72	.01
		Perceived family economic status	.16	2.86	.01
	Model 2 $R^2 = .11$ $F = 9.41$ $p < .01$	Gender	-.14	-2.46	.01
		Perceived family economic status	.13	2.30	.02
		Anxiety	-.09	-1.59	.11
		Avoidance	-.22	-3.83	.00

Model 1, which included gender and perceived family economic status as predictors, was statistically significant, explaining 5.2% of the variance in positive mental health. Both gender (β = -.16) and perceived family economic status (β = .16) contributed significantly, indicating that female participants reported lower levels of positive mental health compared to males, while higher perceived family economic status was associated with higher levels of positive mental health.

In Model 2, the attachment dimensions (anxiety and avoidance) were added to the sociodemographic variables. The inclusion of attachment dimensions increased the explained variance in positive mental health to 11%. The results indicate that the dimension avoidance was the strongest predictor (β = -.22), while the dimension anxiety did not reach statistical significance (β = -.09). Gender (β = -.14) and perceived family economic status (β = .13) remained significant predictors in this model.

The results presented in Table 4 show the findings of the standard multiple regression analysis examining the predictors of negative mental health.

Table 4

Results of a Standard Multiple Regression Analysis Examining the Predictors of Negative Mental Health

Criteria variable	Model	Predictors	β	t	p
Negative mental health	**Model 1** $R^2 = .07$ $F = 11.75$ $p < .01$	Gender	.27	4.75	.00
		Perceived family economic status	-.05	-.80	.42
	Model 2 $R^2 = .19$ $F = 21.35$ $p < .01$	Gender	.21	3.72	.00
		Perceived family economic status	-.03	-.50	.62
		Anxiety	.28	4.97	.00
		Avoidance	.20	3.64	.00

Model 1, which included gender and perceived family economic status as predictors, was statistically significant, explaining 7.5% of the variance in negative mental health. Gender was a significant predictor (β = .27), indicating that female participants were associated with higher levels of negative mental health, whereas perceived family economic status did not reach statistical significance (β = -.05).

In Model 2, the dimensions of attachment (anxiety and avoidance) were added to the sociodemographic variables. The inclusion of attachment dimensions increased the explained variance in negative mental health to 19.4%. The analysis revealed that dimension anxiety was the strongest predictor (β = .28), followed by gender (β = .21) and dimension avoidance (β = .20). Perceived family economic status was not a significant predictor (β = -.03).

Discussion

The aim of this research was to examine the role of attachment dimensions (anxiety and avoidance) and key sociodemographic factors (gender and perceived family economic status) in predicting positive and negative mental health among adolescents. The results confirm the hypothesis that these variables significantly contribute to explaining the variance in both aspects of mental health, offering further insights into how attachment patterns and sociodemographic factors shape adolescents' psychological functioning.

Avoidance emerged as the strongest predictor of positive mental health, with lower levels associated with higher well-being, while anxiety did not reach significance. This aligns with attachment theory, highlighting the importance of secure attachment for positive emotional development and resilience (Mikulincer & Shaver, 2012). Gender and perceived family economic status also contributed significantly: male adolescents and those perceiving higher family economic status reported better positive mental health, whereas female adolescents exhibited higher negative mental health. These can be explained by the fact that material conditions may support psychological well-being by reducing uncertainty and allowing focus on personal growth, while lower economic status may increase anxiety and limit developmental opportunities. Similarly, socially constructed gender roles and expectations may place greater emotional pressures on girls, contributing to their higher vulnerability to psychological distress (Yang et al., 2022; WHO, 2002).

Regarding negative mental health, both attachment dimensions predicted psychological difficulties, with anxiety as the strongest predictor. This association can be explained by the fact that adolescents with high anxious attachment tend to experience emotional instability and fear of rejection, while avoidance also contributes by limiting access to support and effective coping (Xinchen, 2024). In addition to attachment, gender significantly predicted negative mental health, with females reporting higher levels, likely due to societal expectations, gender roles, and social pressures (Campbell et al., 2021; WHO, 2002). Perceived family economic status did not significantly predict negative outcomes, suggesting that interpersonal and emotional factors outweigh material conditions.

These findings emphasize that insecure attachment functions as a vulnerability for mental health problems during adolescence, a period marked by behavioral and emotional changes (Mikulincer & Shaver, 2016). Practical implications highlight the importance of fostering secure attachment and supporting adolescents from economically disadvantaged families. Interventions could include parent-child training, family counseling, and school-based social-emotional learning initiatives. Secure emotional bonds and supportive environments are crucial for promoting positive mental health and reducing psychological difficulties.

The study has limitations, including reliance on self-report measures, which may introduce bias, and online data collection, which may affect sample representativeness. Future research should include additional variables to capture the complexity of adolescent mental health and better understand the multiple factors influencing psychological outcomes.

Conclusion

The results indicate that attachment dimensions and key sociodemographic factors significantly influence adolescents' mental health. Positive mental health is mainly associated with lower avoidance, while negative mental health is most strongly predicted by higher anxiety, with both avoidance and anxiety contributing significantly. Avoidance primarily explains positive mental health, and anxiety primarily explains negative mental health, suggesting that adolescents with low avoidance exhibit more positive emotions, whereas those with high anxiety face greater mental difficulties. Sociodemographic factors also play a role: male adolescents and those perceiving higher family economic status report better positive mental health, while female adolescents show higher negative mental health, even though economic status does not significantly predict negative outcomes. These findings highlight the importance of promoting secure attachment, strengthening parent–child relationships, social-emotional learning, and providing targeted support, particularly for girls and adolescents from economically disadvantaged families.

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Afektivna vezanost kao prediktor mentalnog zdravlja adolescenata

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Apstrakt

Cilj ovog istraživanja je bio ispitati i analizirati učešće i značaj dimenzija afektivne vezanosti (anksioznost i izbegavanje) u predikciji mentalnog zdravlja adolescenata, kao i prediktivni značaj sociodemografskih faktora. Istraživanje je sprovedeno na uzorku od 294 ispitanika (75.2% ženskog pola; 24.8% muškog pola), uzrasta između 15 i 21 godine (M = 19.24, SD = 1.71). Za potrebe istraživanja korišteni su Upitnik porodične afektivne vezanosti i Inventar mentalnog zdravlja. Rezultati su pokazali da dimenzije afektivne vezanosti i ključni sociodemografski faktori značajno doprinose predviđanju pozitivnog i negativnog mentalnog zdravlja adolescenata, ali sa različitim predznacima. Nisko izraženo izbegavanje (β = -.22), viši percipirani materijalni status porodice (β = .13) i muški pol (β = -.14) povezani su sa višim nivoom pozitivnog mentalnog zdravlja, dok su visoko izražene dimenzije anksioznost (β = .28) i izbegavanje (β = .20), zajedno sa ženskim polom (β = .21), povezani sa višim nivoom negativnog mentalnog zdravlja. Rezultati ukazuju na to da je mentalno

zdravlje adolescenata povezano sa predstavama o sebi i drugima koje se formiraju u ranim odnosima sa primarnim figurama. Adolescente koji imaju pozitivan model sebe i drugih imaju bolje mentalno zdravlje u poređenju sa onima koji imaju negativnu sliku o sebi i drugima. Takođe, rezultati ukazuju da su relacijski i kontekstualni faktori povezani sa psihološkim blagostanjem.

Emotion Regulation as a Mediator of the Relationship between Attachment and Subjective Well-Being in Youth[1]*

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Abstract

This study examined the direct effects of attachment dimensions (anxiety and avoidance) on subjective well-being (life satisfaction, positive affect, and negative affect), and investigated the mediating roles of emotion regulation strategies (reappraisal and suppression), among young adults. It was hypothesized that attachment anxiety, attachment avoidance, and suppression would have negative effects on subjective well-being, while reappraisal would have a positive effect. Attachment avoidance was expected to be in a negative correlation with reappraisal but in a positive correlation with suppression, whereas attachment anxiety was hypothesized to be in a negative correlation with reappraisal. Additionally, reappraisal was proposed to mediate the relationships between attachment and well-being. The sample consisted of 204 young adults (56.9% female; mean age = 21.17), with data collected over one month through in-home and online assessments. Measures included the Experiences in Close Relationships (ECR-RD12), Emotion Regulation Questionnaire (ERQ), Satisfaction with Life Scale (SWLS), and Positive and Negative Affect Schedule (PANAS). Results indicated that attachment anxiety was associated with lower life satisfaction and positive affect as well as higher negative affect. Reappraisal mediated the effects of attachment anxiety on well-being, partially for life satisfaction and fully for positive affect. Attachment avoidance negatively predicted life satisfaction but showed no significant relationships with emotion regulation or affect. Suppression had weak, nonsignificant effects. The results highlight reappraisal as a significant mechanism connecting attachment anxiety to subjective well-being, indicating that cognitive-based emotion regulation interventions could be particularly beneficial for those with high attachment anxiety.

Keywords: attachment anxiety, attachment avoidance, subjective well-being, emotion regulation

Emotion Regulation as a Mediator of the Relationship between Attachment and Subjective Well-Being in Youth

Young adulthood, typically spanning the late teens through the twenties, is a critical period of development characterized by substantial personal growth and transformation. During this period, individuals often engage in education and training that lay the foundation for their future careers, explore options in relationships, work, and personal values, and make significant life decisions with lasting consequences (Arnett, 2000). Understanding the key features of healthy psychosocial development is a central focus within human development research and is particularly important during the transition to adulthood. Personal and academic factors, such as emotional self-regulation and academic competence, are believed to significantly contribute to positive adaptation during this period. Although theorists and researchers offer varying definitions of positive development, it is generally understood to encompass functional aspects of human behavior, such as personal strengths or assets, as well as successful developmental outcomes, such as stable employment (O'Connor et al., 2011).

Park (2004) suggests that subjective well-being (SWB) plays a crucial role in healthy psychosocial development, especially during the transition to adulthood. It contributes to better mental health, supports adaptive functioning, and helps protect individuals by reducing the harmful effects of stress and negative life events, thereby lowering the risk of developing psychological disorders. Consequently, fostering and understanding subjective well-being could be the key to promoting mental health and supporting positive developmental outcomes during this crucial life stage.

Subjective well-being (SWB), as defined by Diener et al. (2009), refers to the personal experience of feeling and thinking that one's life is desirable, independent of others' views. This definition emphasizes two core dimensions of SWB: feeling, or the emotional/affective dimension, and thinking, or the evaluative/cognitive dimension (Das et al., 2020). Life satisfaction is a cognitive evaluation of one's entire life and forms the cognitive component of subjective well-being (Andrews & Withey, 1976; Pavot & Diener, 2008). Positive and negative emotions form the affective components of subjective well-being (Diener et al., 1999; Lucas et al., 1996). Although positive affect (PA), negative affect (NA), and life satisfaction (LS) represent three distinct dimensions of subjective well-being (SWB), numerous studies tend to emphasize a single aspect of subjective well-being (most commonly life satisfaction) resulting in a limited understanding of how the cognitive and affective components interrelate (Diener et al., 2003; Pavot & Diener, 2004).

High levels of subjective well-being are typically associated with experiencing life satisfaction, frequent positive emotions (such as joy and optimism), and infrequent negative emotions (such as sadness and anger). In contrast, low levels of SWB are characterized by dissatisfaction with life, a lack of positive emotions, and frequent negative emotions, like anger or anxiety (Diener et al., 1997; Lopez et al., 2018).

However, it is important to understand that subjective well-being is not synonymous with mental or psychological health and that the absence of mental illness does not necessarily mean a person has high levels of SWB. Hypothetically, a person could report high levels of SWB even while experiencing significant psychological issues or low levels despite having few or no symptoms of psychopathology (Greenspoon & Saklofske, 2001).

Moreover, some individuals maintain high levels of subjective well-being despite facing difficult life circumstances, while others report low levels even though they enjoy various advantages, for instance wealth or good health. Research on SWB indicates that it is only partially influenced by external conditions. Instead, certain personality traits or a resilient disposition may play a vital role in sustaining well-being in the face of adversity. One such contributing factor could be adult attachment, which has been linked to this form of resilience (Wei et al., 2011).

Attachment Dimensions: Anxiety and Avoidance

Adult attachment is characterized by two main dimensions: attachment anxiety and attachment avoidance (Mikulincer et al., 2003). Attachment theory posits that humans are biologically predisposed to form bonds with their primary caregivers to seek proximity and enhance survival chances (Mikulincer & Shaver, 2012; Mikulincer et al., 2003). The quality of care provided by the primary caregiver (specifically their ability to meet the infant's needs and offer a secure base) influences the development of an internal working model of attachment. This model encompasses expectations regarding the caregiver's behavior and beliefs about the self. Responsive and sensitive caregivers foster secure attachment and positive self-views, while unresponsive care leads to insecure attachment and negative self-perceptions (Mikulincer & Shaver, 2012). These internal working models, formed early in life, play a crucial role throughout the lifespan by shaping how individuals form and maintain interpersonal relationships. Individuals who score low on both attachment anxiety and attachment avoidance are considered more securely attached. In contrast, people who score high in attachment anxiety tend to crave close relationships but simultaneously feel concerned about intimacy and fear rejection from others. Conversely, those with higher attachment avoidance typically prefer less closeness and emphasize self-reliance and independence due to a lack of trust in others (Chen et al., 2017; Karreman & Vingerhoets, 2012).

Multiple studies (e.g., Karreman & Vingerhoets, 2012; Lavy & Littman-Ovadia, 2011; Wei et al., 2011) suggest that early-formed attachment styles play a key role in shaping individual differences in subjective well-being by affecting emotional perception and regulation, which in turn affect overall life satisfaction. Secure attachment is generally associated with higher levels of subjective well-being, including higher life satisfaction and positive affect, as well as lower negative affect (Galinha et al., 2014; Yang et al., 2008). Alternatively, insecure attachment, including both anxious and avoidant dimension, is associated with lower levels of subjective well-being (Wei et al., 2011; Zhang et al., 2016).

Simpsons and Rholes (2017) differentiate between avoidant and anxious attachment by examining how individuals regulate closeness and emotions in relationships. Avoidant individuals prioritize independence and often see emotional intimacy as either unachievable or undesirable. To maintain distance, they suppress emotions and prioritize independence. Anxious individuals, however, cope with distress by amplifying their emotional responses, which keeps their attachment systems highly activated, often leading to less stable and less satisfying relationships. Specifically, people with higher attachment anxiety are less likely to use cognitive reappraisal, which is a technique that helps reinterpret situations more positively or less threateningly, whereas those with higher attachment avoidance commonly use emotional suppression to maintain emotional distance (Mikulincer et al., 2003).

Emotion Regulation Strategies: Reappraisal and Suppression

Emotion regulation is recognized as a fundamental capacity that significantly influences the trajectory of development, contributing to either adaptive or maladaptive outcomes (Eisenberg et al., 2010). Young adults often exhibit difficulty regulating emotions such as anger and fear and demonstrate fewer effective strategies for regulating these emotions compared to middle-aged adults (Zimmerman & Iwanski, 2014).

Over the past decade, research has emphasized the significance of two key emotion regulation strategies: reappraisal and suppression (Gross, 2015). Reappraisal is viewed as an adaptive strategy and involves reinterpreting a negative emotional event in a way that makes it seem less distressing (Lieberman, 2007). Reappraisal is considered an antecedent-focused strategy, as it seeks to lessen emotional distress by modifying the interpretation or significance of emotion-eliciting stimuli. In contrast, suppression is viewed as a maladaptive, response-focused strategy, involving the inhibition of emotional expression after the emotional response has already been activated (Gross & John, 2003).

Extensive research has shown that attachment significantly influences how individuals regulate emotions. Attachment avoidance has been positively associated with suppression (Brenning & Braet, 2013; Karreman & Vingerhoets, 2012; Read et al., 2018; Troyer & Greitemeyer, 2018) and negatively associated with reappraisal (Karreman & Vingerhoets, 2012; Read et al., 2018). Contrarily, attachment anxiety has been negatively associated with reappraisal (Karreman & Vingerhoets, 2012; Read et al., 2018), while evidence suggests no significant relationship between attachment anxiety and suppression (Brenning & Braet, 2013).

Moreover, multiple studies have highlighted the importance of emotion regulation in contributing to subjective well-being (SWB); higher levels of subjective well-being are associated with higher levels of reappraisal and lower levels of suppression (Brewer et al., 2016; Gross & John, 2003; Haga et al., 2009). Research consistently highlights the critical role of emotion regulation in promoting subjective well-being, with many studies investigating its mediating effect when it comes to

various potential predictors of well-being (Ericson et al., 2024; Mandal et al., 2022; Sha et al., 2022).

The Present Study

Research (e.g., Brewer et al., 2016; Gross & John, 2003; Haga et al., 2009; Wei et al., 2011) has shown that attachment and emotion regulation have a significant effect on individuals' subjective well-being. While it is evident that these factors play an important role, the processes by which they operate are not fully understood. This study aims to explore the role of emotion regulation as a mediator in the relationship between attachment and subjective well-being among young individuals.

Previous studies (e.g., Karreman & Vingerhoets, 2012; Monaco et al., 2021; O'Connell's, 2021; Peng et al., 2023; Wei et al., 2011) have investigated how emotion regulation mediates the relationship between attachment and subjective well-being. For instance, Peng et al. (2023) observed that although higher attachment anxiety and avoidance were linked to lower subjective well-being, decreased use of reappraisal partly explained this connection, whereas suppression showed no mediating effect. Karreman and Vingerhoets (2012) found that cognitive reappraisal mediated the effect of attachment on well-being, while suppression did not act as a mediator.

Understanding the relationships between attachment emotion regulation, and subjective well-being in young people can be important for psychological interventions and contribute to the development of targeted strategies that help youth better understand and manage their emotional experiences, improve the quality of their interpersonal relationships, and enhance their overall subjective well-being. Therefore, the objective of this study is to examine the direct effect of attachment on subjective well-being—specifically life satisfaction, positive affect, and negative affect—as well as to explore the role of emotion regulation as a mediator in the relationship between attachment and subjective well-being. Based on the literature reviewed above, it is hypothesized that attachment anxiety, attachment avoidance, and suppression will have a negative effect on subjective well-being, whereas reappraisal will have a positive effect. Attachment avoidance is expected to have a negative effect on reappraisal, while having a positive effect on suppression. Attachment anxiety is hypothesized to have a negative effect on reappraisal. Furthermore, reappraisal is expected to mediate the relationship between attachment and subjective well-being.

Method

Sample and Procedure

The sample consisted of 204 participants, of whom 116 (56.9%) were female and 88 (43.1%) were male. The average age was 21.17 years (range 18–25, *SD* = 1.97). Data collection took place in May 2025 in the southeastern region of Serbia,

specifically in the cities of Niš, Leskovac, and Vranje. The data collection process lasted approximately one month. Testing was conducted either in participants' homes or via an online form. Participation was voluntary, and no compensation was provided. Informed consent was obtained from all participants prior to their involvement. The study was conducted anonymously, with the completion of the test battery requiring approximately 30 minutes.

Measures

Experiences in Close Relationships (ECR-R; Fraley et al., 2000; for Serbian adaptation see Hanak & Dimitrijević, 2013). This is a 36-item, two-dimensional questionnaire assessing attachment. Participants responded on a 7-point Likert scale ranging from 1 - *strongly disagree* to 7 - *strongly agree.* The instrument measures two dimensions: *Attachment Anxiety* and *Attachment Avoidance*. *Attachment Anxiety* comprises 18 items (e.g., "I'm afraid that I will lose my partner's love"), while *Attachment Avoidance* also includes 18 items (e.g., "I prefer not to be too close to romantic partners"). In the current sample, the questionnaire demonstrated good psychometric properties, with Cronbach's alpha coefficients of .80 for *Attachment Anxiety* and .83 for *Attachment Avoidance*.

Emotion Regulation Questionnaire (ERQ; Gross & John, 2003; for Serbian adaptation see Popov et al., 2015). This instrument consists of 10 items assessing two dimensions of emotion regulation: *Reappraisal* and *Suppression*. Responses were given on a 7-point Likert scale (1 - *strongly disagree* to 7 - *strongly agree*). *Reappraisal* includes 6 items (e.g., "When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm"), whereas *Suppression* includes 4 items (e.g., "I keep my emotions to myself"). The questionnaire exhibited good reliability in this sample, with Cronbach's alpha of .86 for *Reappraisal* and .73 for *Suppression*.

Satisfaction With Life Scale (SWLS; Diener et al., 1985; for Serbian adaptation see Vukojević, 2016). It is a 5-item unidimensional scale assessing global life satisfaction. Participants responded using a 7-point Likert scale (1 - *strongly disagree* to 7 - *strongly agree*). An example item is "In most ways my life is close to my ideal." The scale showed good internal consistency in the present sample (Cronbach's alpha = .88).

Positive and Negative Affect Schedule (PANAS; Watson et al., 1988; for Serbian adaptation see Mihić et al., 2014). It consists of 12 items divided into two dimensions: *Positive Affect* and *Negative Affect*. Participants rated how often they experienced each emotion on a 5-point Likert scale (1 - *never* to 5 - *most of the time*). *Positive Affect* includes 6 items (e.g., "energetic"), and *Negative Affect* includes 6 items (e.g., "upset"). Reliability analyses yielded Cronbach's alpha values of .91 for *Positive Affect* and .75 for *Negative Affect* in this sample.

Data Analysis

The data collected was analyzed using the statistical software *SPSS* along with the *PROCESSmacro* to assess mediation models. Pearson correlation was employed to explore the associations among the variables, while hierarchical regression analysis was used to examine predictive relationships and assess potential mediation effects. Additionally, multiple mediation analysis was conducted. According to the framework proposed by Baron and Kenny (1986), a variable can be identified as a mediator if the following conditions are met: (1) the predictor variables significantly predict the outcome variable; (2) the predictors significantly predict the mediators; and (3) the mediators significantly predict the outcome variable when controlling for the predictors. Based on these criteria, a hierarchical multiple regression analysis was conducted to examine whether reappraisal and suppression mediate the relationships between the predictors—anxiety and avoidance—and the outcome variables: life satisfaction, positive affect, and negative affect. In the first step of the regression, attachment anxiety and attachment avoidance were entered as predictors. In the second step, reappraisal and suppression were added to assess their potential mediating roles while controlling for the initial predictors. Additionally, a separate multiple regression analysis was conducted to confirm that the predictors have a significant effect on the proposed mediators. Finally, the mediating effects of reappraisal and suppression were tested using the multiple mediation approach outlined by Preacher and Hayes (2008).

Results

The results are presented by first displaying the basic descriptive indicators, followed by the results of the correlation, regression, and mediation analyses.

Table 1
Descriptive Measures of All Variables Used in the Study

	N	min – max	M	SD	Sk	Ku
Attachment Anxiety	204	1 – 7	2.83	1.54	0.60	-0.44
Attachment Avoidance	204	1 – 7	5.24	1.33	-0.75	-0.08
Reappraisal	204	1 – 7	5.66	1.31	-0.82	-0.35
Suppression	204	1 – 7	2.51	1.41	1.23	1.02
Life Satisfaction	204	1 – 7	4.71	1.43	-0.22	-0.19
Negative Affect	204	1 – 4	2.27	0.55	0.22	-0.31
Positive Affect	204	1 – 5	4.02	1.12	-1.19	0.29

Note. Sk – Skewness; *Ku* – Kurtosis.

Descriptive statistics for all study variables were examined to assess normality (Table 1). Most variables demonstrated acceptable skewness and kurtosis values within the range of -2 to +2, indicating approximately normal distributions (Hair et al., 2022).

Table 2

Correlation Between Attachment, Emotion Regulation, Subjective Well-Being, Positive Affect, and Negative Affect

	1.	2.	3.	4.	5.	6.
1. Attachment Anxiety						
2. Attachment Avoidance	.01					
3. Reappraisal	-.47**	-.05				
4. Suppression	.46**	.04	.48*			
5. Life Satisfaction	-.29*	-.36**	.29**	-.21**		
6. Negative Affect	.21*	-.05	-.21**	.19**	-.12	
7. Positive Affect	-.26*	-.04	.28**	-.18**	.57**	-.10

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

A correlation analysis was conducted to examine the relationships between attachment, emotion regulation, and subjective well-being indicators (Table 2). Attachment anxiety was significantly negatively correlated with reappraisal and life satisfaction, and positively correlated with suppression and negative affect. It was also negatively associated with positive affect. Attachment avoidance showed a significant negative correlation with life satisfaction, but did not significantly correlate with the emotion regulation strategies. Reappraisal was positively correlated with life satisfaction and positive affect, and negatively correlated with negative affect. Suppression was negatively associated with life satisfaction and positive affect, and positively correlated with negative affect. Life satisfaction was strongly positively related to positive affect.

Initially, a hierarchical multiple regression analysis was performed to examine the predictive effects of attachment anxiety and attachment avoidance on life satisfaction and to test whether reappraisal and suppression could be mediating these effects. In Step 1, attachment anxiety and avoidance explained 21% of the variance in life satisfaction ($R^2 = .21$, $F(2, 201) = 27.68$, $p < .01$). Both attachment anxiety ($B = -.26$, $SE = .05$, $\beta = -.28$, $p < .01$) and attachment avoidance ($B = -.28$, $SE = .04$, $\beta = -.36$, $p < .01$) were significant negative predictors. In Step 2, adding reappraisal and suppression increased the explained variance to 22% ($R^2 = .22$, $\Delta R^2 = .01$, $F(4, 199) = 14.43$, $p < .001$), with only reappraisal being a significant positive predictor ($B = .20$, $SE = .09$, $\beta = .28$, $p < .05$). Attachment avoidance remained a significant predictor ($p < .01$), while attachment anxiety was marginally significant ($p = .058$). This suggests partial mediation for attachment avoidance and possible partial or full mediation for attachment anxiety.

Since the presence of mediation also requires that the predictor variables significantly predict the mediator variables, multiple regression analysis was used to test this requirement. Attachment anxiety and attachment avoidance were entered simultaneously into the regression model to examine their unique predictive contributions to reappraisal and suppression. The regression model predicting reappraisal ($R^2 = .31$, $F(2, 201) = 27.12, p < .01$) and the model predicting suppression ($R^2 = .34$, $F(2, 201) = 38.04, p < .01$) were both significant. Attachment avoidance showed no significant link to reappraisal nor suppression. Attachment anxiety negatively predicted reappraisal ($B = –.45$, $SE = .03$, $\beta = –.52$, $p < .05$), indicating higher attachment anxiety is linked to less use of reappraisal, and positively predicted suppression ($B = .49$, $SE = .04$, $\beta = .57, p < .05$), indicating higher attachment anxiety is linked to more use of suppression.

Given these results, a mediation analysis was conducted to examine whether reappraisal mediates the relationship between attachment anxiety and life satisfaction (Table 3).

Table 3

Total, Direct, and Indirect Effects of Attachment Anxiety on Life Satisfaction Mediated by Reappraisal

Predictor	Mediator	a	b	c	c'	ab
Attachment Anxiety	Reappraisal	-.45**	.20*	-.26**	-.17*	-.09*

Note. a = effect of the predictor on the mediator, *b* = effect of the mediator on the criterion, *c* = total effect of the predictor on the criterion, *c'* = direct effect of the predictor on the criterion when the proposed mediator is controlled for, *ab* = indirect effect, i.e., the effect of the mediator in the relationship between the predictor and the criterion. *$p < .05$, **$p < .01$

Figure 1

Reappraisal as a Mediator Between Attachment Anxiety and Life Satisfaction
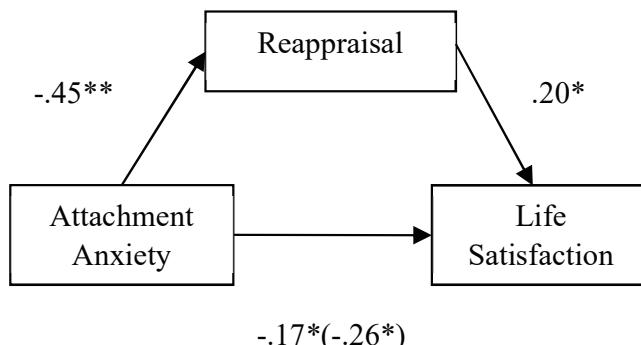
The results showed that attachment anxiety significantly predicted lower use of reappraisal, and reappraisal positively predicted life satisfaction. Attachment anxiety also had a significant total negative effect on life satisfaction. When reappraisal was

included in the model, the direct effect of attachment anxiety on life satisfaction was reduced but remained significant, indicating partial mediation. The indirect effect through reappraisal was also significant, suggesting that reappraisal partially explains the negative impact of attachment anxiety on life satisfaction. The mediation analysis model is illustrated in Figure 1 to enhance the clarity and understanding of the results.

Subsequently, a hierarchical multiple regression analysis was performed to examine the predictive effects of attachment anxiety and attachment avoidance on positive affect and to test whether reappraisal and suppression mediate these effects. In Step 1 of regression analysis, attachment anxiety and avoidance explained 5% of variance in positive affect ($R^2 = .05$, $F(2, 201) = 7.36$, $p < .05$), with attachment anxiety being a significant negative predictor ($B = -.19$, $SE = .05$, $\beta = -.26$, $p < .01$). In Step 2, adding reappraisal and suppression increased explained variance to 8% ($R^2 = .08$, $\Delta R^2 = .07$, $F(4, 199) = 4.84$, $p < .001$), with only reappraisal being a significant positive predictor ($B = .24$, $SE = .11$, $\beta = .28$, $p < .05$).

Based on these findings and the established relationship between attachment anxiety and reappraisal, a mediation analysis was conducted to examine whether reappraisal mediates the relationship between attachment anxiety and positive affect (Table 4).

Table 4
Total, Direct, and Indirect Effects of Attachment Anxiety on Positive Affect Mediated by Reappraisal

Predictor	Mediator	a	b	c	c'	ab
Attachment Anxiety	Reappraisal	-.45**	.16**	-.19**	-.08	-.07*

Note. a = effect of the predictor on the mediator, b = effect of the mediator on the criterion, c = total effect of the predictor on the criterion, c' = direct effect of the predictor on the criterion when the proposed mediator is controlled for, ab = indirect effect, i.e., the effect of the mediator in the relationship between the predictor and the criterion. *$p < .05$, **$p < .01$

Figure 2
Reappraisal as a Mediator Between Attachment Anxiety and Positive Affect
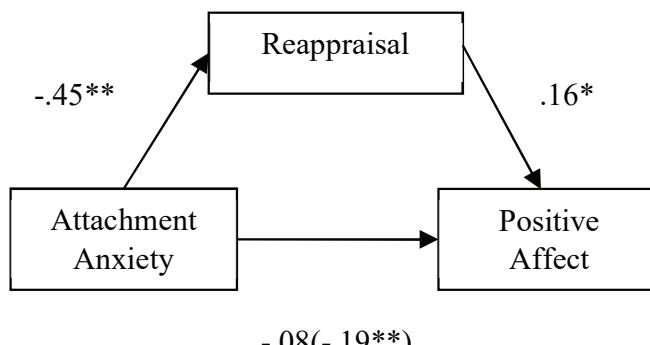
The results indicated that attachment anxiety significantly predicted lower use of reappraisal strategies, and reappraisal was positively associated with positive affect. Attachment anxiety also had a significant negative total effect on positive affect. However, when reappraisal was included in the model, the direct effect of attachment anxiety on positive affect was reduced and became non-significant, suggesting full mediation. The indirect effect of attachment anxiety on positive affect through reappraisal was significant, indicating that reappraisal fully mediates the negative effect of attachment anxiety on positive affect. The mediation analysis model is illustrated in Figure 2 to enhance the clarity and understanding of the results.

Lastly, a hierarchical multiple regression analysis was performed to examine the predictive effects of attachment anxiety and avoidance on negative affect, and to test whether reappraisal and suppression mediate these effects. In Step 1 of regression analysis, attachment anxiety and avoidance explained 4% of variance in negative affect ($R^2 = .04$, $F(2, 201) = 5.12$, $p < .05$). Attachment anxiety was a significant positive predictor ($B = .07$, $SE = .02$, $\beta = .21$, $p < .05$). In Step 2, with mediators added, explained variance increased to 5% ($R^2 = .05$, $\Delta R^2 = .03$, $F(4, 199) = 3.01$, $p < .05$). However, neither attachment anxiety nor avoidance remained significant, suggesting potential mediation effects may account for the earlier direct effect of attachment anxiety. Furthermore, suppression ($B = .02$, $SE = .04$, $\beta = .05$, $p = .62$) and reappraisal ($B = -.04$, $SE = .05$, $\beta = -.07$, $p = .46$) did not significantly predict negative affect. Although attachment anxiety predicted greater suppression and reduced reappraisal, neither emotion regulation strategy had a significant effect on negative affect in this model. Consequently, the indirect effects are very small and lack statistical significance, suggesting that mediation effects are minimal or practically nonexistent. Overall, the model's explanatory power is limited, accounting for only about 5% of the variance.

Discussion

The current study investigated the relationships between attachment dimensions (anxiety and avoidance), emotion regulation strategies (reappraisal and suppression), and subjective well-being indicators (life satisfaction, positive affect, and negative affect). The findings offer several key insights into the psychological mechanisms linking attachment with subjective well-being.

Consistent with previous research (Wei et al., 2011; Zhang et al., 2016), attachment anxiety was associated with lower life satisfaction and positive affect, as well as with greater negative affect. Notably, mediation analyses revealed that reappraisal significantly mediated the relationship between attachment anxiety and both life satisfaction and positive affect, with partial mediation in the case of life satisfaction and full mediation in the case of positive affect. In line with prior studies (e.g., Karreman & Vingerhoets, 2012; Read et al., 2018), this underscores reappraisal as an emotional regulation process that people with high attachment anxiety are less likely to utilize. The identified mediation pathway indicates that

cognitive interventions focused on enhancing reappraisal could be especially beneficial in reducing the adverse psychological effects of anxious attachment. For instance, cognitive-behavioral techniques that address and modify automatic negative thoughts might help protect individuals with high attachment anxiety from experiencing low life satisfaction and diminished positive emotions.

In contrast, attachment avoidance negatively predicted life satisfaction but did not significantly relate to either reappraisal nor suppression, and showed no significant relationships with affective outcomes. These results align with previous research indicating that avoidant and secure individuals experience similar levels of negative affect, yet those with avoidant attachment report lower levels of happiness (Sheinbaum et al., 2015). Concerning the nonsignificant relationship with positive and negative affect, research has shown that people with high levels of attachment avoidance often struggle to differentiate between emotional states and have limited awareness of their own feelings (Mallinckrodt & Wei, 2005). Furthermore, they may not fully recognize their emotional distress and, due to their distrustful and negative views of close relationships, tend to cope independently to preserve autonomy, control, and emotional distance (Simpson & Rholes, 2017). Therefore, it can be assumed that their constant self-reliance and a persistent sense of disconnect can foster feelings of isolation, which in turn reduce life satisfaction.

The absence of mediation effects through reappraisal or suppression suggests that attachment avoidance has an effect on life satisfaction through different mechanisms beyond straightforward difficulties in managing or regulating emotions. According to attachment theory, individuals high in attachment avoidance tend to prioritize self-reliance and emotional distance by downplaying emotional needs and suppressing closeness or dependence in relationships (Mikulincer & Shaver, 2007). In this context, the absence of mediation through emotional regulation strategies like reappraisal or suppression is quite consistent with the avoidant attachment style. Individuals with high attachment avoidance often report low emotional expressiveness not necessarily because they lack regulation skills, but because they consciously distance themselves from emotional processing. That is, they may not struggle to manage emotions in the same way individuals with high attachment anxiety do, but instead choose not to engage emotionally at all. Therefore, the findings suggest that the reduced life satisfaction seen in avoidant individuals may not be related to emotional regulation, but rather with other underlying psychological patterns linked to their attachment style. This aligns with emerging research (e.g., Lavy & Littman-Ovadia, 2011; Deniz & Yıldırım Kurtuluş, 2025) showing that positive psychological strengths rather than just emotion regulation strategies may be more relevant mediators in the link between attachment avoidance and life satisfaction. Overall, these findings highlight the complex relationship between attachment avoidance and subjective well-being. Gaining a more thorough understanding of these dynamics may provide valuable insight into how attachment avoidance contributes to individuals' experiences of well-being.

Cognitive reappraisal consistently predicted higher life satisfaction and increased positive affect, reflecting existing research that highlights its value in

effective emotion regulation (Brewer et al., 2016; Gross & John, 2003; Haga et al., 2009; John & Gross, 2004). The capacity to mentally reframe emotionally charged situations appears to play an important role in enhancing subjective well-being. Conversely, emotional suppression demonstrated weak and non-significant associations with subjective well-being, consistent with earlier research (e.g., Butler et al., 2003).

The prediction model, which included attachment anxiety, attachment avoidance, reappraisal, and suppression, explained only a small portion of the variance in negative affect. While attachment anxiety was initially a significant predictor, its effect weakened once mediating variables were included, and neither reappraisal nor suppression had a significant effect on negative affect. These findings suggest that other unmeasured factors may have a greater impact on negative emotionality. Future research should explore additional potential mediators to better understand how attachment relates to subjective well-being.

This study also faced several limitations. First, its cross-sectional design prevents conclusions about causality; longitudinal or experimental approaches are needed to establish the direction of the observed relationships. Second, although the focus on young adults was intentional, the sample's homogeneity limits the generalizability of the findings. Finally, all measures were self-reported, raising concerns that the results were influenced by how people chose to present themselves or how they interpreted the questions. This can lead to bias, as people might not always be fully accurate or honest, intentionally or unintentionally, when reporting on their thoughts, feelings, or behaviors.

In summary, the results highlight the central role of attachment anxiety on subjective well-being, primarily through its effect on emotion regulation strategy reappraisal. Although avoidant attachment is associated with lower life satisfaction, it seems to operate through different pathways. Emotion regulation strategies, particularly reappraisal, show potential as effective intervention targets to improve well-being, especially for those with high levels of attachment anxiety.

Conclusion

This research advances a more detailed understanding of how different attachment dimensions have an effect on subjective well-being directly as well as through emotion regulation strategies. Notably, attachment anxiety plays a significant role in lowering levels of subjective well-being by interfering with the use of reappraisal, which in turn has an effect on life satisfaction and positive affect. Conversely, attachment avoidance seems to have an effect on well-being through factors other than emotion regulation, indicating the need to explore additional underlying mechanisms. The distinct pathways observed for anxious and avoidant attachments underscore the importance of customized strategies in both research and clinical settings. While cognitive reappraisal consistently supports better well-being, suppression appears to have minimal effect, aligning with the existing evidence. The

model's limited explanation of negative affect suggests that further studies should incorporate a wider range of psychological and environmental factors. Although this study faced methodological constraints, including its cross-sectional design, a relatively uniform sample, and reliance on self-report data, its findings highlight the important role of emotion regulation, especially reappraisal, in connecting attachment to subjective well-being. Future research employing longitudinal and experimental methods should seek to establish causal links and identify additional mediators to enhance our understanding of these relationships. In conclusion, this research highlights the complex connections between attachment and well-being and offers direction for developing focused interventions aimed at improving life satisfaction and positive affect, particularly for individuals with high attachment anxiety.

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Regulacija emocija kao medijator odnosa između afektivne vezanosti i subjektivnog blagostanja mladih

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Apstrakt

Ovo istraživanje je imalo za cilj ispitivanje direktne efekte dimenzija privrženosti (anksioznost i izbegavanje) na subjektivno blagostanje (zadovoljstvo životom, pozitivan afekt i negativan afekt), kao i medijatorsku ulogu strategija regulacije emocija (kognitivna reinterpretacija i potiskivanje) kod mladih odraslih osoba. Hipoteza je bila da će anksioznost, izbegavanje i potiskivanje imate negativni efekat na subjektivno blagostanje, dok će kognitivna reinterpretacija imati pozitivan efekat. Konkretno, očekivalo se da će viši nivoi izbegavanja biti povezani sa nižim nivoima kognitivne reinterpretacije, ali višim nivoima potiskivanja, dok je što se tiče anksioznosti bilo očekivano da bude povezano sa nižim nivoima kognitivne reinterpretacije. Takođe, pretpostavka je da kognitivna reinterpretacija posreduje u

odnosima između privrženosti i blagostanja. Uzorak je činilo 204 mladih odraslih osoba (56,9% žena; prosečna starost = 21,17), a podaci su prikupljani u domovima ispitanika i popunjavanjem upitnika preko interneta. Instrumenti koji su bili korišćeni su: Iskustva u bliskim vezama – revidirana verzija (ECR-RD12), Upitnik emocionalne regulacije (ERQ), Skala životnog zadovoljstva (SWLS) i Skala pozitivnog i negativnog afekta (PANAS). Rezultati su pokazali da je anksioznost povezana sa nižim zadovoljstvom životom i pozitivnim afektom, kao i sa višim nivoima negativnog afekta. Kognitivna reinterpretacija se pokazala kao medijator između anksioznosti i subjektivnog blagostanja; kao parcijalni u odnosu na zadovoljstvo životom i kao potpuni u odnosu na pozitivan afekt. Izbegavanje je bilo negativno povezano sa zadovoljstvom životom, ali nije pokazalo značajnu povezanost sa regulacijom emocija ili afektom. Potiskivanje je imalo slabe i statistički neznačajne efekte na subjektivno blagostanje. Rezultati ističu kognitivnu reinterpretaciju kao važan mehanizam koji povezuje anksioznost sa subjektivnim blagostanjem, što ukazuje da bi intervencije zasnovane na kognitivnoj regulaciji emocija mogle biti posebno korisne za osobe sa visokim nivoom afektivne anksioznosti.

Ključne reči: afektivna anksioznost, afektivno izbegavanje, subjektivno blagostanje, regulacija emocija

The Relationships Between Cyberbullying and the Dark Triad: A Meta-Analysis [1]*

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Abstract

Previous studies have, mainly, confirmed the role of dark personality traits in cyberbullying perpetration. However, when it comes to the relationship between individual Dark Triad traits (narcissism, Machiavellianism, and psychopathy) and cyberbullying, the results of studies are inconsistent. Therefore, the aim of this meta-analytic study was to determine the intensity of the relationship between cyberbullying and Dark Triad traits. The studies included in the meta-analysis are quantitative correlational studies in English, published in scientific journals. The analysis included 14 studies, which resulted in 18 independent effect sizes and a total sample of 12434 subjects from different populations (high school students, college students and the general population). The results of the meta-analytic study showed that cyberbullying has a positive correlation of low intensity with narcissism ($r = .21$, $p < .001$) and Machiavellianism ($r = .28$, $p < .001$), while the association with psychopathy is of moderate intensity ($r = .31$, $p < .001$). A moderating effect of population was not found in the association of cyberbullying with the dimensions of the Dark Triad. No moderating effect of region was found in the association of cyberbullying with the dimensions of narcissism and psychopathy, while there is a moderating effect of region on the correlation of cyberbullying and the dimension of Machiavellianism. Overall, the results of this study provide a confirmation to the empirical corpus which highlights the importance of all Dark Triad traits in cyberbullying perpetration, but given certain limitations, the estimated effect sizes in the population should be understood as preliminary.

Keywords: cyberbullying, Dark Triad, meta-analysis

The Relationships Between Cyberbullying and the Dark Triad: A Meta-Analysis

Cyberbullying

In the era of global technological progress, violence can be done indirectly, through electronic devices or the Internet, and this type of violence is called cyberspace violence or cyberbullying (Olweus, 2012). It is defined as "an aggressive intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend himself" (Smith et al., 2008, p. 376). Tokunaga gives the following definition of cyberbullying: "Cyberbullying is any behavior performed through electronic or digital media by individuals or groups that repeatedly communicates hostile or aggressive messages intended to inflict harm or discomfort on others" (Tokunaga, 2010, p. 279). Hinduja & Patchin (2012, p. 88) define cyberbullying as "willful and repeated harm inflicted through the use of computers, cell phones, and other electronic devices". The main characteristic of cyberbullying is that it takes place electronically, through digital technologies. However, it is evident that there are certain disagreements when it comes to defining the phenomenon of cyberbullying more specifically (Slonje et al., 2013; Tokunaga, 2010), and the most important disagreements relate to the segments concerning repetition of the act and power imbalance (Slonje et al., 2013). Traditional violence implies repeating acts of violence, and in the case of cyberbullying, one act of violence committed online can trigger the reactions of many people and thus become violence (Slonje et al., 2013). The victim assumes that many people have seen the compromising material and perceives it as multiple injuries, thus as an act of violence. Sharing material online and thinking that the material has been seen by many users can be seen as repeating acts of violence in the digital space (Opsenica Kostić, 2022).

When it comes to the power imbalance between the bully and the victim, there is little evidence to suggest that cyberbullies have superior technological skills (Grigg, 2010). A factor that potentially contributes to the imbalance of power in cyberbullying is the anonymity of abusers and the use of pseudonyms on social networking platforms (Opsenica Kostić, 2022). Victims usually do not know who the cyberbully is, which makes it difficult to deal with the new situation (Slonje et al., 2013). If the victim knows who the cyberbully is, the power imbalance in the online space is only a reflection of the power imbalance that exists in the offline space (Opsenica Kostić, 2022). This imbalance of power stems from the disparity in physical strength or social status between the abuser and the victim. Additionally, the victim is afraid of confronting the cyberbully online because of possible further consequences offline (Slonje et al., 2013). A factor that definitely contributes to the imbalance of power in most cases of cyberbullying is the permanence of posted material, the fact that the victim cannot delete the content posted online, which contributes to the feeling of helplessness (Dooley et al., 2009; Opsenica Kostić, 2022).

Cyberbullying should be distinguished from similar concepts. Demarcation of the concept of cyberbullying from similar constructs is essential for the meta-analysis procedure, as it is an important criterion for the inclusion (or exclusion) of a particular study from the analysis. There is terminological confusion in the literature when it comes to the terms cyberbullying, cyber aggression, cyber harassment, cyberviolence and other similar terms. Some authors recommend using the term digital aggression instead of cyberbullying (Grigg, 2010). The terms cyberbullying and cyberviolence overlap a lot, and some authors believe that cyberbullying is more focused on individuals and is repeated, while cyberviolence targets a group of individuals with strong political preferences and does not happen often (Wang et al., 2022). Some authors make a terminological difference between one-off cases of violence, so they label such acts as digital harassment or digital attack (cyber harassment, cyber attack; Menesini & Nocentini, 2009). Additionally, cyberbullying should be distinguished from concepts such as trolling and flaming. Flaming is online verbal sparring, sending electronic messages with offensive, malicious, humiliating or vulgar content with the aim of discrediting people with different views (Dinić, 2022). Similar to flamers, trolls provoke other users to engage in emotional, lengthy online discussions (Buckels et al., 2013; Herring et al., 2002). Unlike flamers, trolls are not fundamentally interested in the topic, and their goal is to create confusion and discord in the existing online community and provoke as many reactions as possible from online participants (Dinić, 2022). Unlike digital bullying, cyber trolling does not create a power imbalance between the perpetrator and the target, it is mostly anonymous and can be one-off (Golf-Papez & Veer, 2017). Likewise, it has been shown that cyberbullying and cyber trolling have different correlations with personality traits from the *Big Five* model, with cyberbullying being correlated with higher *Neuroticism* and cyber trolling with greater *Openness to Experience* (Zezulka & Siegfried-Spellar, 2016). Therefore, apart from the fact that cyberbullying and cyber trolling differ in behavior, they can also be explained by different personality traits.

The Dark Triad

The concept of dark personality traits refers to a set of socially undesirable personality traits in a non-clinical population (Paulhus, 2014). The Dark Triad concept implies the combined effect of narcissism, Machiavellianism and psychopathy (Paulhus & Williams, 2002). Subclinical sadism was later added to this division (Buckels et al., 2013), and this extended concept was named the Dark Tetrad. In the subclinical sense, the main features of narcissism are inflated self-image, sense of superiority (Dinić et al., 2022), excessive self-love, grandiosity and need for admiration (Campbell & Foster, 2007). Subclinical psychopathy implies callousness, impulsivity and aggressiveness (Rauthmann, 2012), while Machiavellianism is characterized by manipulativeness and a negative perception of human nature (Jones & Paulhus, 2009). The common characteristics of these traits are callousness and

manipulativeness in interpersonal relationships (Dinić et al., 2020; Furnham et al., 2013). Although they share certain common characteristics, Dark Triad personality traits have characteristics that distinguish them. Psychopathy is characterized by a lack of feelings of guilt and remorse, as well as poor impulse control, while the primary characteristics of Machiavellianism are thoughtfulness, cynicism, and exploitation of others (Paulhus, 2014). An important difference between Machiavellianism and psychopathy is reflected in impulsivity, which is characteristic of psychopathy, while Machiavellianism is characterized by thoughtfulness and better control of behavior (Paulhus, 2014). The grandiose form of narcissism, which is most often examined within the concept of the Dark Triad, is primarily characterized by high self-esteem, a sense of superiority and a demand for special treatment (Paulhus, 2014).

Cyberbullying and the Dark Triad

Examining the relationship between the Dark Triad and cyberbullying, several studies have confirmed that all traits positively correlate with cyberbullying perpetration (Demircioğlu & Göncü-Köse, 2023; Goodboy & Martin, 2015; Panatik et al., 2022; Safaria et al., 2020; Wright et al., 2020), while in some studies the association of cyberbullying with narcissism and Machiavellianism was not confirmed (Pineda et al., 2022). Moreover, according to the results of some studies, psychopathy is the only significant predictor of cyberbullying (Goodboy & Martin, 2015), while in other studies Machiavellianism was the strongest predictor of cyberbullying, followed by psychopathy (Panatik et al., 2022; Safaria et al., 2020). In addition, the results of a study conducted by Wright et al. (2020) on adolescent samples from different countries (China, India, and Japan) suggest that the association between the Dark Triad and cyberbullying is not consistent and varies by country of origin. More precisely, in this study it was determined that narcissism and callous and unemotional traits were positively associated with cyberbullying perpetration for Chinese and Indian adolescents, but not for Japanese adolescents. In addition, the relationship between Machiavellianism traits and cyberbullying perpetration was found for Indian adolescents only. Such findings are explained by the differences in social organization, culture and value system between countries.

By reviewing the literature, we can notice that there are certain factors that are common to the Dark Triad and cyberbullying perpetration. The factors most commonly associated with cyberbullying and the Dark Triad are: (1) personality traits (Geng et al., 2021; Muris et al., 2017); (2) self-esteem (Pyżalski, 2012; Witt el al., 2011); (3) low levels of empathy (Jonason et al., 2013; Zych et al., 2019) and (4) emotion management (Akram & Stevenson, 2021; Kellerman et al., 2013).

The research results show that cyberbullying perpetration is associated with low empathy (Zych et al., 2019), lack of efficiency in emotion management (Segura et al., 2020), impulsive reactions as an emotional regulation strategy (Dinić et al., 2021) and low self-esteem (Dinić et al., 2021; Lei et al., 2020). When considering the relationship between self-esteem and Dark Triad traits, findings generally suggest that

explicit measures of self-esteem are positively related to narcissism and negatively related to Machiavellianism (Witt et al., 2011) and psychopathy (Falkenbach et al., 2013). Although all three traits are associated with a lack of empathy (Jonason et al., 2013), Machiavellianism and psychopathy are additionally positively associated with maladaptive emotion regulation strategies (Akram & Stevenson, 2021; Kyranides & Neofytou, 2021). Regarding narcissism, some studies indicated a positive relationship between this trait and maladaptive emotion regulation strategies (Altmann, 2017), while others found no significant relationship between these two variables (Zhang et al., 2015). Such findings support the thesis of certain authors that psychopathy and Machiavellianism are the core of a socially deviant character, while narcissism has a *brighter* nature (Rauthmann & Kolar, 2013). Nevertheless, we can note that the lack of empathy is a common factor of both the Dark Triad and cyberbullying (Jonason et al., 2013; Zych et al., 2019).

When it comes to personality traits, the results showed that the Honesty-Humility trait from the HEXACO model is inversely related to all Dark Triad traits (Muris et al., 2017) as well as to cyberbullying (Geng et al., 2021). This dimension defines human fairness, honesty, modesty and avoidance of greed (De Vries, 2013) and implies the absence of dark traits that can increase the risk of committing violence on the Internet (Hodson et al., 2018). People with low scores on the Honesty-Humility trait tend to manipulate others and break rules for personal gain, feel a strong sense of self-importance, and are more prone to deviant behavior. Thus, a low score on the Honesty-Humility dimension underlies both the Dark Triad and cyberbullying, and is a crucial factor in antisocial behavior (Allgaier et al., 2015; Thielmann & Hilbig, 2018).

Furthermore, review of the literature shows that certain demographic variables (e.g., gender, age) correlate differently with cyberbullying and Dark Triad traits. For example, some studies have revealed that the Dark Triad of personality traits are more characteristic of men than women (Muris et al., 2017). While a meta-analysis found that more men were involved in cyberbullying perpetration behavior than females, a moderation analysis showed that the gender difference varied depending on the sample region (Sun et al., 2016). In addition, according to research findings, the frequency of cyberbullying increases from youth to emerging adulthood and then decreases (Barlett & Chamberlin, 2017), most often occurs among the population of older high school students (Zhu et al., 2021), and the frequency is the lowest among the older population (Wang et al., 2019).

The mentioned differences in the research results are the motive for conducting a more detailed analysis of this relationship. The main goal of the paper is to try to answer the question about the intensity and significance of the relationship between dark personality traits and cyberbullying. Moreover, considering the results of previous studies, the moderator effect of region and population on the correlation of cyberbullying with traits of the Dark Triad was examined in the paper.

Based on the review presented above, the following hypotheses were formulated:

H1: Cyberbullying is positively associated with all traits of the Dark Triad (narcissism, Machiavellianism and psychopathy)

H2: There is a moderating effect of population on the correlation of cyberbullying and all traits of the Dark Triad

H3: There is a moderating effect of region on the correlation of cyberbullying and all traits of the Dark Triad

Method

Acceptable operationalizations of cyberbullying and the Dark Triad

Cyberbullying. In this meta-analysis, papers in which cyberbullying is defined according to the criteria given in the previously mentioned definitions (Hinduja & Patchin, 2012; Smith et al., 2008; Tokunaga, 2010) are acceptable. The meta-analysis did not include papers examining constructs similar to cyberbullying (cyberviolence, cybertrolling, cyber harassment). The following instruments will be taken as acceptable operationalizations of cyberbullying: *The European Cyberbullying Intervention Project Questionnaire – ECIPQ,* (Del Rey et al., 2015); *Cyberbullying & Online Aggression Survey Instrument – COAS,* (Hinduja & Patchin, 2015), as well as other instruments (related to a certain culture) if the review of the papers leads to the conclusion that they are based on the stated theoretical assumptions.

The Dark Triad. Although the paper theoretically discusses the Dark Triad, the Dark Tetrad concept is considered acceptable because it is a theoretical expansion of the primary concept (the Triad) obtained by adding subclinical sadism as a personality trait. Therefore, the meta-analysis will also include papers that consider the correlation between the Dark Tetrad and cyberbullying, with the author using only measures of narcissism, Machiavellianism, and psychopathy. When it comes to the Dark Triad, the following instruments will be taken as acceptable operationalizations: *The Short Dark Triad – SD3,* (Jones & Paulhus, 2014); *Dirty Dozen – DD,* (Jonason & Webster, 2010); *The Short Dark Tetrad Scale – SD4,* (Paulhus et al., 2021), as well as other instruments that measure the dark dimensions of personality individually, if the review of the papers determines that they are based on the stated theoretical assumptions.

Acceptable scientific sources

Only papers in English were included in the meta-analysis, and the database was searched in English. The search for papers was carried out on the Internet services available to the author, namely the *EBSCO* database and *Google Scholar*. As acceptable sources, peer-reviewed journals, doctoral dissertations, as well as papers from conferences and proceedings published in their entirety were considered. Based on PRISMA guidelines (Page et al., 2021), the flow of literature search, article

selection, screening, eligibility assessment and inclusion of papers in this research are shown in Figure 1.

Figure 1
Flow Diagram
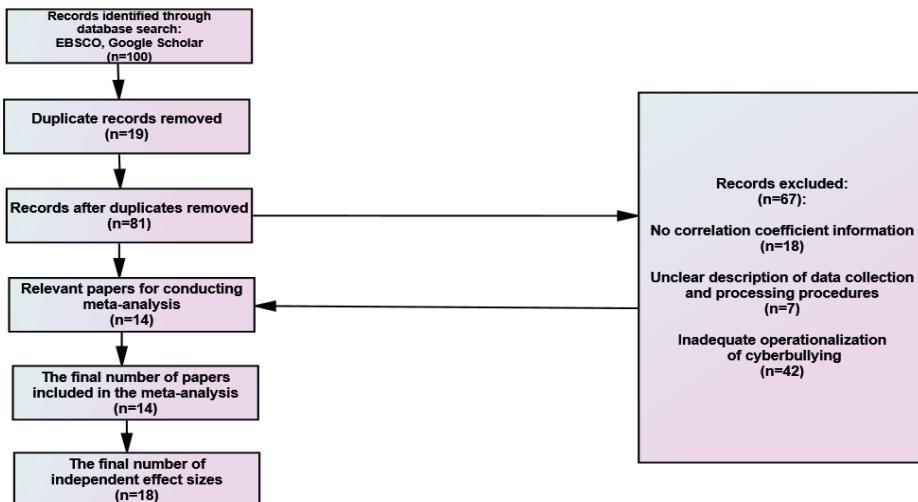
Criteria for including papers in the study

The criteria for including studies in the meta-analysis procedure are as follows: 1) studies are published in English, 2) studies contain information on the correlation coefficient between cyberbullying and the dimensions of the Dark Triad - narcissism, Machiavellianism and psychopathy, 3) the variables are operationalized in the previously described manner that refers to the instruments and 4) the research was conducted in a methodologically correct manner, i.e., data collection and processing procedure were clearly described.

Statistical analyses plan

The IBM SPSS program (version 28) was used for statistical data processing. The meta-analysis procedure was performed according to the instructions exemplified by Sen and Yildirim (2022), which is a complete guide and practical manual for meta-analysis in the SPSS software package.

Effect sizes and heterogeneity analysis

The Pearson's correlation coefficient was used for the effect size. Because each of the Dark Triad traits represents a factor on its own, the results show the correlations

of cyberbullying with each trait separately. Therefore, in a strictly methodological sense, this meta-analysis consists of three meta-analyses. The measure that will be used as a weighting effect size measure is the sample size. First, Pearson's correlation coefficient values were transformed into Fisher's z-values. The SPSS program does not have an option to calculate Fisher's Z-transformed correlation and its variance, so an online calculator (https://www.campbellcollaboration.org/research-resources/effect-size-calculator.html) was used. The z-values and their variances were entered into the database, after which a weighted average effect size was calculated for each of the Dark Triad dimensions using the *Analyze-Continuous Outcomes-Pre-Calculated Effect Size* option. Then, using the *Analyze-Continuous Outcomes-Pre-Calculated Effect Siz*e option, the average weighted effect size and the statistical significance of the weighted effect size for each of the Dark Triad dimensions were obtained. After these statistical operations, the Z-values were again translated into Pearson's correlation coefficient (https://onlinestatbook.com/calculators/fisher_z.html). The random effects method assumes the heterogeneity of the populations from which the various study samples come from. According to the literature, in meta-analytic studies with non-experimental research, it is more appropriate to use variable effects models, because they fit better with real-life data (Diener et al., 2009, according to Đorđević, 2021). The method of Hunter and Schmidt (2004) was used to show measures of result dispersion of individual studies around the weighted average effect size. The total variance (VAR) consists of the error variance (VARse) and the true variance (VARr), that is, the true variance is the difference between the total variance and the error variance. The total variance (VAR) was calculated using the formula:

$$VAR = \frac{\Sigma(n*(r-\bar{r})^2)}{\Sigma n}$$

and the sampling error variance (VARse) using the formula:

$$VARse = \frac{((1-\bar{r}^2)^2)}{(Mn-1)}$$

After that, the true variance was obtained (VARr = VAR - VARse), i.e., a measure of the true variability of effect sizes between the populations included in the meta-analysis.

Heterogeneity was assessed by determining the indicator of heterogeneity significance (Q statistic), the percentage of total variability attributable to heterogeneity (I^2 statistic), and the total amount of variability ratio in the observed correlations to the amount of sampling variability (H^2 statistic). If the value of the Q statistic is greater than the number of own degrees of freedom (df = k - 1, where k is the number of studies included in the meta-analysis), the hypothesis of homogeneity between individual studies can be rejected. Rejection of the hypothesis of homogeneity justifies the use of random or variable effects models, calculation of I^2 and H^2 statistics, and analysis of hypothesized moderator variables (Huedo-Medina et al., 2006). The conventional classification suggests the following interpretation of

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the value of the I^2 statistic: values around 25 represent low heterogeneity, around 50 represent moderate heterogeneity, and over 75 represent high heterogeneity (Huedo-Medina et al., 2006). The H^2 statistic represents the confidence interval of the percentage of total variability attributable to heterogeneity.

Moderation analysis

In the studies included in the analysis, the sample consisted of members of different populations from different countries. In order to eliminate doubts about the moderating effect of population and region, an analysis of the moderating effect of these variables was conducted. The populations that were represented in the analyzed papers were divided into three categories - high school students, college students and the general population, while the countries were classified into 4 groups – Europe (Spain, Austria, Poland, Netherlands), the USA, the Middle East (Turkey) and the Far East (China, Japan, Malaysia, Indonesia).

Results

Review of Papers

The electronic search was conducted between 01. 06. 2023. and 01. 07. 2023. by entering keywords in the search engines of electronic services for searching electronic scientific journals, *EBSCO* database and *Google Scholar*. In an attempt to find relevant studies, the following search commands were used: "cyberbullying" and "Dark Triad" and "correlation". After displaying the results, the first 100 found papers out of a total of 1250 papers that appeared in the search results were reviewed. After removing 19 duplicates, 81 records were identified and entered the second stage of screening. During the second phase, the author determined eligibility by reading the abstract of each article. The complete literature search procedure and review of abstracts was carried out by the author himself. When an article on the relationship between the Dark Triad and cyberbullying was confirmed as a relevant record, it was retained to be read in full at the next stage. However, after reviewing the papers, it was determined that a considerable number of studies do not examine cyberbullying, but constructs similar to cyberbullying, such as cyberviolence, cybertrolling, and cyber harassment. One dissertation on the topic of cyberbullying and the Dark Triad was found (Mashaba, 2020), but it was not included in the meta-analysis because it examines attitudes toward cyberbullying, not cyberbullying actions. A number of studies do not contain data on the correlation values between variables and are therefore excluded from the analysis. The study by Wright et al. (2020) is a study conducted on samples of adolescents from three different countries and shows the correlation coefficients of cyberbullying with the dimensions of the Dark Triad for each population separately. The situation is similar with the study conducted

by Brown et al. (2019), which contains data on the correlation coefficients and personality traits of the Dark Triad in three samples (Black, White and Asian). These studies were included in further analysis, so the total number of studies calculated as relevant for the analysis is 18. Studies examining constructs similar to cyberbullying (cyberviolence, cybertrolling, cyber harassment.) were not considered relevant for further analysis. Additionally, studies in which the measurement instruments used were not precisely described were not included in further analysis. Table 1 provides an overview of the studies included in the meta-analysis.

Table 1

Overview of Papers Included in the Meta-Analysis

						Pearson's correlation coefficient			
Authors	Source	Sample size	Sample (population, average age, country)	Cb-M	DT-M	N	M	P
Demircioğlu & Göncü-Köse, 2023	Current Psychology	547	high school students; 15,8; Turkey	ECIPQ	SD3	.20	.21	.41
Wright et al., 2020a	Asia Pacific Journal of Social Work and Development	683	adolescents; 12,5; China	CBPS	Narc; Mach; CU	.24	.33	.34
Wright et al., 2020b	Asia Pacific Journal of Social Work and Development	480	adolescents; 13; India	CBPS	Narc; Mach; CU	.33	.36	.37
Wright et al., 2020c	Asia Pacific Journal of Social Work and Development	474	adolescents; 12,5; Japan	CBPS	Narc; Mach; CU	.12	.21	.08
Brown et al., 2019a	Cyberpsychology, Behavior, and Social Networking	665	general population; White 22,48; USA	CBPS	SD3	.20	.26	.31
Brown et al., 2019b	Cyberpsychology, Behavior, and Social Networking	440	general population; Black Participants; 22,48; USA	CBPS	SD3	.29	.27	.40

Brown et al., 2019c	Cyberpsychology, Behavior, and Social Networking	777	general population; Asian Participant;22,48; USA	CBPS	SD3	.09	.30	.37
Panatik et al., 2022	EPESS	400	students; Malaysia	COASI	DD	.27	.42	.38
Hayes et al., 2020	Journal of Psychopathology and Behavioral Assessment	540	students; 19.27; USA	COASI	SD3	.11	.11	.31
Kircaburun et al., 2018	Personality and Individual Differences	761	students; 20.70; Turkey	COASI	DD	.47	.46	.30
Gajda et al., 2023	Current Psychology	251	general population; 28.54; Poland	FCBCV	SD4	.19	.27	.30
Schade et al., 2021	Frontiers in psychology	749	general population; 25; Austria	ECIPQ	NPI-15;MACH; SRP-III;	.17	.16	.30
Goodboy & Martin, 2015	Computers in human behavior	227	students; 20.97; USA	RAPRI	DD	.27	.30	.38
Safaria et al., 2020	International Journal of Scientific & Technology Research	2407	adolescents; 12-18; Indonesia	COASI	SD3	.13	.18	.13
van Geel et al., 2017	Personality and Individual Differences	1568	high school students ; 17.58; Netherlands	ECIPQ	SD3	.18	.17	.28
Zhang et al., 2022	Frontiers in psychology	501	adolescents; 14.01; China	CABS	DD	.22	.32	.31
Huang et al., 2023	Frontiers in Psychology	571	adolescents; 14,53; China	CBQ-Ch	DD	.17	.36	.32
Pineda et al., 2022	Frontiers in Psychology	393	adolescents; 14.18; Spain	CAI-CA	SD3	.05	.05	.13

Note. Cb-M = Cyberbullying measure; DT-M = Dark Triad measure; N = Narcissism; M = Machiavellianism; P = Psychopathy; ECIPQ (*The European Cyberbullying Intervention Project Questionnaire*; Del Rey et al., 2015); CBPS (*Cyberbullying perpetration scale;* Wright & Li, 2013); COASI (*Cyberbullying & Online Aggression Survey Instrument*; Hinduja & Patchin, 2015); FCBCV (*The Florence CyberBullying-CyberVictimization Scales*; Palladino et al., 2015); RAPRI (Griezel et al., 2012); CABS (*The Cyber Aggressive Behavior Scal*e;

Zhao & Gao, 2012); CBQ-ch (Lam & Li, 2013); CAI-CA (*Bullying Behavior Scale*, Magaz et al., 2016). SD3 (*The Short Dark Triad*; Jones & Paulhus, 2014); Narc (Thomaes et al., 2008); Mach (Christie & Geis, 1970); CU (*Callous-Unemotional Traits*; Frick, 2004); DD (The Dirty Dozen; Jonason & Webster, 2010); SD4 (*The Short Dark Tetrad Scale*; Paulhus et al., 2021); NPI-15 (*Narcissistic Personality Inventory-15*, Spangenberg et al., 2013); MACH (Rauthmann, 2013); SRP-III (*Self-Report Psychopathy;* Paulhus et al., 2016).

Weighted Effect Size

The metastatistics calculated in this analysis are presented in Table 2 according to the Dark Triad dimensions.

Table 2
The Relationship Between the Dimensions of the Dark Triad and Cyberbullying

Dark Triad	$\bar{r}$ [95% CI]	k	N	VAR	VARse	VARr	Q (df)	I^2	H^2
N	[0.16 – 0.26] 0.21*	18	12434	0.01	0.00	0.01	139.07* (17)	87.80	8.18
M	[0.22 – 0.33] 0.28*	18	12434	0.01	0.00	0.01	157.24* (17)	89.30	9.30
P	[0.27 – 0.36] 0.31*	18	12434	0.01	0.00	0.01	102.39* (14)	81.50	5.40

Note. N = Narcissism; M = Machiavellianism; P = Psychopathy; *$p < .001$;* $\bar{r}$ = weighted effect size (Pearson's correlation coefficient); k = number of studies, N = total sample size; VAR_R = total variance; VAR_{SE} = error variance; $VAR\bar{r}$ = true variance; Q = indicator of the significance of heterogeneity; I^2 = percentage of total variability attributable to heterogeneity; H^2 = the ratio of the total amount of variability in the observed correlations to the amount of sampling variability

As specified in Table 2, all three dimensions of the Dark Triad - narcissism, Machiavellianism and psychopathy - are significantly positively correlated with cyberbullying, although, according to Cohen's criteria (Cohen, 1992), the correlation of cyberbullying with narcissism and Machiavellianism is low, while with psychopathy it is moderate. Based on the value of the Q statistic, the hypothesis of homogeneity between individual studies can be rejected, which justifies the use of random or variable effects models and the calculation of I^2 and H^2 statistics. The value of the I^2 statistic indicates high heterogeneity among studies.

By checking the relationship between the effect size and the standard error on the dimensions of the Dark Triad (Diagrams 1 to 3), intercept values were obtained on Egger's test: for narcissism (0.05; $p = .18$), for Machiavellianism (0.21; $p = .08$) and for psychopathy (0.19; $p = .03$). The distribution does not deviate significantly from the funnel shape, which demonstrates absence of bias in the published papers,

or that the bias is negligible (Diagrams 1 and 2). For the psychopathy dimension, the intercept value on the Egger's test is statistically significant (0.19; $p = .03$), indicating some bias in the published papers when it comes to this dimension (Diagram 3).

Diagram 1
Relationship Between the Standard Error of the Effect Size and the Effect Size – Narcissism
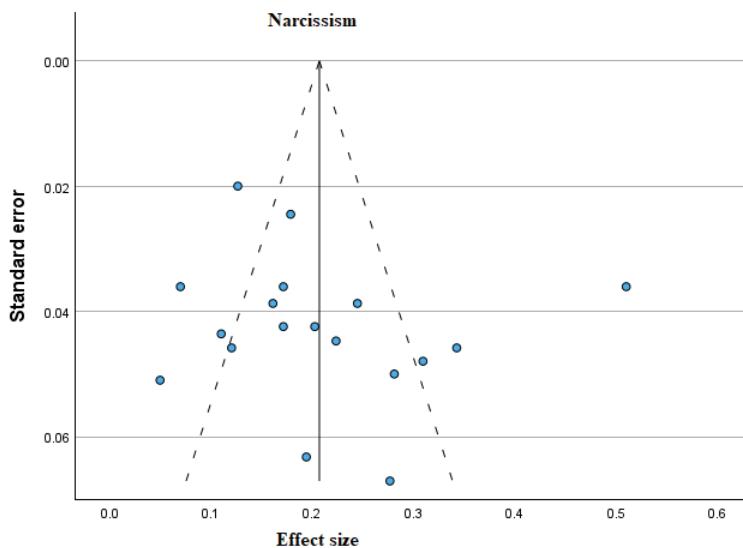

Diagram 2
The relationship Between the Standard Error of the Effect Size and the Effect Size – Machiavell
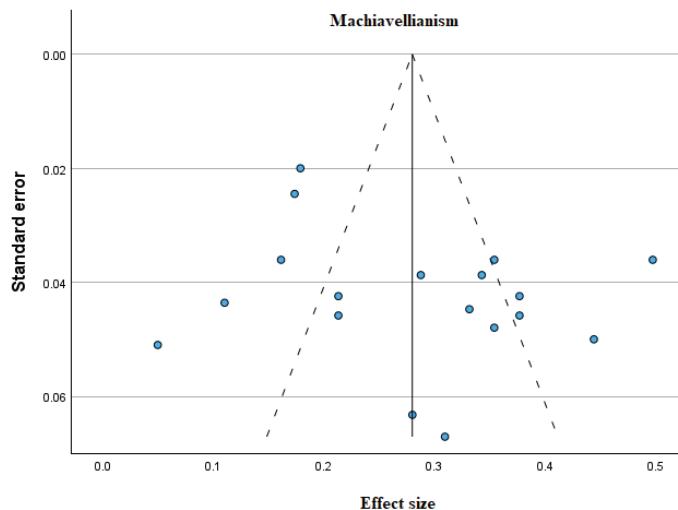
Diagram 3

The Relationship Between the Standard Error of the Effect Size and the Effect Size – Psychopathy
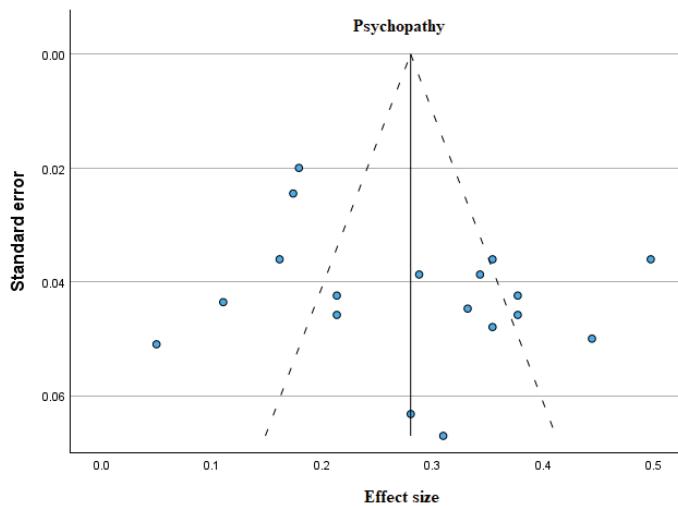
Moderation Analysis

Table 3 presents the effect sizes by population (high school students, college students and the general population). No moderating effect of population was found for the association between cyberbullying and the Dark Triad dimensions. The Q statistic values are: for narcissism ($Q = 0.73$; $df = 2$; $p = .69$), for Machiavellianism ($Q = 1.53$; $df = 2$; $p = .47$) and for psychopathy ($Q = 2.52$; $df = 2$; $p = .28$).

Table 3

Population-Based Weighted Average Effect Size Analysis

Population	Number of studies	n	$\bar{r}$		
			Narcissism	Machiavellianism	Psychopathy
High school students	9	7624	0.18	0.25	0.27
College students	3	1167	0.22	0.29	0.36
General population	6	3643	0.24	0.32	0.33

Note. $\bar{r}$ = weighted effect size (Pearson's correlation coefficient); n = total sample size.

Table 4 presents the effect sizes by region (Europe, USA, Middle East and Far East). No moderating effect of region was found in the association of cyberbullying with the dimensions of narcissism ($Q = 3.22$; $df = 3$; $p = .36$) and psychopathy ($Q = 4.90$; $df = 3$; $p = .18$), while there was a moderating effect of region on the correlation of cyberbullying with the dimension of Machiavellianism ($Q = 9,57$; $df = 3$; $p = .02$).

Table 4

Analysis of Weighted Average Effect Size by Region

Region	Number of studies	n	$\bar{r}$		
			Narcissism	Machiavellianism	Psychopathy
Europe	4	2961	0.15	0.16	0.26
USA	5	2649	0.18	0.28	0.35
Middle East	2	1308	0.36	0.36	0.37
Far East	7	5516	0.21	0.32	0.29

Note. $\bar{r}$ = weighted effect size (Pearson's correlation coefficient); *n* = total sample size.

Discussion

In the modern world of digital technologies and online communication via social networking sites, the phenomenon of cyberbullying is becoming more ubiquitous. This complex problem is approached from different sides - from the perspective of individual development, environmental factors, or, as was the case in this analysis, from the perspective of personality, particularly from the perspective of the Dark Triad model. Although previous studies have confirmed the association of dark personality traits with cyberbullying perpetration, there is inconsistency in the findings regarding the association of individual Triad traits with this construct. Therefore, the aim of this meta-analysis was to gain a clearer picture of the personality of people who are violent toward others in cyberspace. More precisely, the goal of the study was the quantitative integration of the results obtained in previous studies in order to determine the relationship between cyberbullying and the dimensions of the Dark Triad in the general population.

The obtained average weighted correlation size between all three traits of the Dark Triad and cyberbullying is statistically significant, and accordingly, our first specific hypothesis is confirmed. This hypothesis was formulated in accordance with the results of a number of previous studies that confirmed the role of all Triad traits in cyberbullying perpetration (Demircioğlu & Göncü-Köse, 2023; Goodboy & Martin, 2015; Panatik et al., 2022; Safaria et al., 2020; Wright et al., 2020). Moreover, the Dark Triad traits share certain common characteristics, namely callousness and manipulativeness in social relations (Dinić et al., 2020), so this finding is expected. In other words, we hypothesize that this common core makes all three dark traits relevant to cyberbullying. According to Cohen's criteria (Cohen, 1992), in the case of narcissism and Machiavellianism, we can speak of a low positive correlation with cyberbullying, while psychopathy, as a dimension of the Dark Triad, shows a moderate positive association with cyberbullying. Psychopathy is characterized by a lack of empathy, a lack of guilt, violation of social norms, high levels of impulsivity, a pronounced need for excitement, and low anxiety (Furnham et al., 2013), which makes psychopathy the darkest part of the Dark Triad. People with pronounced

psychopathy are emotionally superficial in social relations, skilled in shaping other people's opinions about them, charismatic, verbally fluent (O'Boyle et al., 2011), and tend to engage in cyberbullying because they are indifferent to the feelings of others and very impulsive (Demircioglu & Göncü-Köse, 2022; Goodboy & Martin, 2015). Psychopathy is associated with various types of socially undesirable behavior (O'Boyle et al., 2011) and preference for violent and other types of antisocial media content (Williams et al., 2001), and accordingly, the association of psychopathy with cyberbullying is expected.

Machiavellianism is a personality trait characterized by manipulating, exploiting, and deceiving others to further one's own interests (Furnham et al., 2013). People with high Machiavellianism believe that manipulation is the key to success, they have a cynical worldview, and distorted moral principles, such as the belief that the end justifies the means. *Machiavellians* often lie and deceive others, and are prone to betrayal (O'Boyle et al., 2011). We hypothesize that these characteristics make the Machiavellian dimension associated with violence in digital space. In some studies, the Machiavellian dimension has been most strongly correlated with cyberbullying (Huang et al., 2023; Panatik et al., 2022; Zhang et al., 2022). Although people with pronounced Machiavellian traits rarely engage in extreme forms of antisocial behavior (Jones & Paulhus, 2009), it is likely that the anonymity in cyberspace encourages them to engage in violent online behavior. People with pronounced Machiavellian and psychopathic traits are prone to traditional aggressive behavior and bullying with the aim of manipulation, thrill-seeking, or revenge (Zhu & Jin, 2021), so it is reasonable to assume that they will also exhibit such behavior in cyberspace.

Furthermore, according to the results of the meta-analysis, narcissism, as a dimension of the Dark Triad, is the weakest associated with cyberbullying, although this association is also statistically significant. In studies conducted in China, Machiavellianism and psychopathy are more strongly associated with cyberbullying than narcissism (Huang et al., 2023; Zhang et al., 2022), which is consistent with studies conducted in other cultures. However, in some studies, narcissism has been a significant predictor of cyberbullying (Brown et al., 2019; Wright et al., 2020). The main characteristics of narcissism are a sense of grandiosity, superiority, dominance, overestimation of self-worth, fantasies of success and having control over others (Paulhus & Williams, 2002). Narcissistic individuals overestimate their personal achievements, are extremely sensitive to criticism, and engage exclusively in social and romantic relationships with people who admire them and give them enough attention (O'Boyle et al., 2011). Narcissistic individuals appear arrogant, aggressive, and unlikable to others (Foster & Campbell, 2005). We hypothesize that the above characteristics link narcissism to violent behavior in cyberspace. The lowest intensity of the relationship between narcissism and cyberbullying supports the thesis of some authors that narcissism has a relatively *brighter* nature (Rauthmann & Kolar, 2013), because narcissistic personalities are charismatic and show higher emotional intelligence (Cairncross et al., 2013; Scavone, 2017).

The heterogeneity analysis showed that the hypothesis of homogeneity between individual studies can be rejected, i.e., that heterogeneity among studies, according

to the previously described conventional classification, is high. This result confirms the justification for using the variable effects model, as well as the moderator analysis. However, the results of the moderation analysis show that the population from which the sample was taken (adolescents, students, general population) has no moderating effect; accordingly, the second specific hypothesis is not confirmed. The third hypothesis was only partially confirmed because, according to the results, the moderating effect of the region was found only in the case of the correlation of cyberbullying with the Machiavellianism dimension. As already noted, in some studies the Machiavellianism dimension correlated most strongly with cyberbullying, and such values were obtained in studies conducted in the Middle and Far East, while this is not the case in European countries and the USA. However, based on the results obtained, it is not possible to conclude with precision why the average effect of studies conducted in the Middle and Far East is moderate, and the average effect of studies conducted in the USA and Europe is low according to Cohen's criteria (Cohen, 1992). It is necessary to verify this result in future research.

The limitations of this meta-analytic study stem from the defined criteria for inclusion/exclusion of individual studies. By defining the search to include papers in English, by setting stricter methodological criteria in terms of acceptable operationalizations (especially when it comes to cyberbullying), a sample of 14 articles was obtained. The author believes that defining strict criteria is important for methodological consistency and clarity, so that we do not sum up different constructs through summative analysis. The meta-analysis did not include results in unpublished papers. Given the aforementioned limitations, the estimated effect size in the population should be understood as preliminary. In future meta-analyses, it would be useful to redefine the criteria so that, in addition to published papers, unpublished studies and studies in other languages are included.

Conclusion

The results of this meta-analytic study showed that cyberbullying has a positive correlation of low intensity with narcissism and Machiavellianism, while the association with psychopathy is of moderate intensity. Such results are expected and provide confirmation to empirical corpus which highlights the significant role of dark personality traits in cyberbullying perpetration. In the context of implications for further psychological practice, the results of this study suggest the need for further research to examine in more detail protective and risk factors when it comes to cyberbullying, in order to explain the nature of the obtained correlations between cyberbullying and the Dark Triad traits. Moreover, finding moderators, i.e., factors that influence the direction and intensity of the relationship between the Dark Triad traits and cyberbullying, is a challenge for further research.

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Povezanost digitalnog nasilja[2] i Mračne trijade: metaanaliza

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Apstrakt

Prethodne studije su, uglavnom, potvrdile ulogu mračnih osobina ličnosti u vršenju digitalnog nasilja. Međutim, kada je u pitanju veza između pojedinačnih crta Mračne trijade (narcizma, makijavelizma i psihopatije) i digitalnog nasilja, rezultati studija nisu konzistentni. Stoga je cilj ove meta-analitičke studije bio da se utvrdi intenzitet veze između digitalnog nasilja i osobina Mračne trijade. Studije uključene u metaanalizu su kvantitativne korelacione studije na engleskom jeziku, objavljene u naučnim časopisima. Analiza je obuhvatila 14 studija, što je rezultiralo sa 18 nezavisnih veličina efekata i ukupnim uzorkom od 12434 ispitanika iz različitih populacija (srednjoškolci, studenti i opšta populacija). Rezultati meta-analitičke studije pokazali su da digitalno nasilje ima pozitivnu korelaciju niskog intenziteta sa narcizmom ($r = .21$, $p < .001$) i makijavelizmom ($r = .28$, $p < .001$), dok je povezanost sa psihopatijom umerenog intenziteta ($r = .31$, $p < .001$). Nije pronađen moderatorski efekat populacije u povezanosti digitalnog nasilja sa dimenzijama Mračne trijade. Nije pronađen moderatorski efekat regiona u povezanosti digitalnog nasilja sa dimenzijama narcizma i psihopatije, dok postoji moderatorski efekat regiona na korelaciju digitalnog nasilja i dimenzije makijavelizma. Generalno, rezultati ove studije pružaju potvrdu empirijskoj građi koja ističe značaj svih osobina Mračne trijade u vršenju digitalnog nasilja, ali s obzirom na određena ograničenja studije, procenjene veličine efekata u populaciji treba shvatiti kao preliminarne.

Ključne reči: digitalno nasilje, Mračna trijada, metaanaliza

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[2] U skladu sa publikacijama UNICEF-a (prema Dinić, 2022) u domaćoj literaturi *cyberbullying* se prevodi kao digitalno nasilje.

Behind the Decision: Understanding the Reasons for Staying in or Leaving an Abusive Relationship [1]*

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Abstract

Intimate partner violence against women represents a serious social issue with significant negative consequences for victims, their families, and society as a whole. Understanding the reasons why women remain in or leave abusive relationships is essential for the development of effective prevention and intervention measures. The aim of this study was to explore the factors influencing women's decisions to stay in or leave violent relationships. The study was conducted with a sample of 15 women residing in a safe house, using semi-structured interviews and thematic analysis for data interpretation. The findings indicate that key reasons for remaining with an abusive partner include the normalization or tolerance of less severe forms of violence, lack of social and economic resources, internalized patriarchal values, religious beliefs, emotional attachment, as well as fear and feelings of shame. In contrast, the decision to leave is typically triggered by the escalation of violence, abuse directed at children, loss of hope in the partner's change, and fear of retaliation. This study highlights the complexity of decision-making processes among women experiencing intimate partner violence and underscores the need for comprehensive support that takes into account their psychological, social, and cultural circumstances.

Keywords: victims, intimate partner violence, remaining with an abusive partner, leaving process

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Behind the Decision: Understanding the Reasons for Staying in or Leaving an Abusive Relationship

Intimate partner violence (IPV) against women represents a specific form of violence within intimate relationships, where women are most frequently the victims, and the perpetrators are their current or former partners, regardless of whether they are formally married or cohabiting (World Health Organization [WHO], 2013; Petrušić & Konstantinović Vilić, 2010). This violence spans multiple dimensions: physical, psychological (including coercive control), sexual, economic, and other abusive behaviors (Heise, 1998; WHO, 2013; WHO, 2025). Research has shown that IPV is one of the most common forms of violence against women globally and has profound consequences for their physical and psychological health (Chandan et al., 2020; Garcia-Moreno et al., 2006; Lagdon et al., 2014).

This paper focuses on understanding the reasons why women stay in or leave abusive relationships. The reasons for staying are complex and shaped by personal, social, and economic factors, often involving fear, economic dependence, social pressures, and internal psychological mechanisms (Anderson & Saunders, 2003; Grigsby & Hartman, 1997; Saunders, 2020; Stylianou, 2018). Understanding these reasons is key to developing adequate support and intervention strategies.

A comprehensive model explaining why victims of violence may not leave abusive partners was developed by Grigsby and Hartman (1997). According to this model, the first level of barriers to leaving arises from the environment. These barriers concern the availability of resources such as money, alternative housing, support from police or courts, friends, family, or professionals (Caridade et al., 2020; Heron et al., 2022). Even when such resources exist, what matters is the victim's perception of their availability (Anderson & Saunders, 2003; Barnett, 2000; Grigsby & Hartman, 1997). Economic dependence on the partner is frequently cited as one of the primary reasons women stay in abusive relationships (Anderson & Saunders, 2003; Barnett, 2000; Johnson et al., 2022; Stylianou, 2018).

The second level of barriers relates to the outcomes of socialization and internalized gender beliefs. In patriarchal societies women are socialized to form their identity in relation to their partner, to sacrifice their needs for those of their partner or children (Grigsby & Hartman, 1997). Instead of valuing personal achievements, women learn to seek affiliation through their partners (Woods, 1999), making their sense of well-being contingent on the quality of their relationship (Mookherjee, 1997). Some women fear losing their partner, believing that leaving is worse than occasional physical aggression (Caridade et al., 2020; Frisch & MacKenzie, 1991). In addition, victims do not leave their partners because of love and the hope that the partner will change (Heron et al., 2022; Pocock et al. 2019; Short et al., 2000; Towns & Adams, 2000). By assuming the role of a caregiver, women may internalize guilt for the relationship's failure, which complicates leaving due to their efforts to repair the relationship (Debold et al., 1993, as cited in Anderson et al., 2003; Janković, 2022). A woman may also remain in the relationship to ensure her child

grows up with both parents (Barnett, 2001), or due to the belief that violence is a common feature of romantic relationships (Herbert et al., 1991). Research has found that myths of romantic love may lead victims to perceive aggression as part of relationship dynamics (Ramírez-Carrasco et al. 2023). A certain degree of jealousy may be interpreted by some women as affirming their desirability and as a reflection of their partner's attachment or commitment (Grigsby & Hartman, 1997). Religious beliefs aligned with patriarchal values, such as women's submission to men and disapproval of divorce, can also contribute to staying in abusive relationships (Grigsby & Hartman, 1997; Levitt et al., 2015).

The third level of barriers concerns psychological processes and consequences that arise from victimization. These include defense mechanisms (e.g., denial, rationalization, minimization) that shift blame for the abuse away from the perpetrator (Ferraro & Johnson, 1983). Common rationalizations include beliefs such as "he didn't know what he was doing," "he temporarily lost control," "he's an alcoholic," or "he's unemployed" (Ragg et al., 1999; Varvaro, 1991, as cited in Barnett, 2001). Prolonged exposure to abuse combined with intermittent acts of kindness and enforced social isolation may lead the victim to adopt the abuser's worldview as a means of psychological survival, a process often described as trauma bonding (Effiong et al. 2022). Submission to the abuser can function as a survival strategy (Grigsby & Hartman, 1997), consistent with findings that victims often develop coping mechanisms aimed at minimizing harm and preserving safety, such as appeasing the perpetrator or avoiding conflict (Winfield et al., 2023). Additionally, the cycle of violence (Walker, 1979), alternating between punishment and reward, increases the woman's dependence and reduces her ability to leave, while promises to change sustain her hope that the violence will not recur (Anderson & Saunders, 2003). Furthermore, the experience of repeatedly unsuccessful efforts to escape from the abusive relationship can foster a sense of learned helplessness (Walker, 1979).

Explanations that focus on the victim's behavior or personality risk blaming the victim for her own victimization (Barnett, 2001). Although there may be differences between abused and non-abused women, these are consequences, not causes of abuse. The decision to stay is less influenced by individual characteristics than by economic and relational factors (Phillips, 1993; Sullivan, 1991, as cited in Barnett, 2001). It is not possible to identify a psychological profile that predicts choosing an abuser as a partner (Rhodes, 1992). Anxiety, depression, self-blame, low self-esteem, and memory impairments and other serious mental health problems are among the psychological consequences of abuse (Chandan et al., 2020; Lagdon et al., 2014). However, empirical findings suggest that women possessing higher levels of self-esteem and an internal locus of control demonstrate a greater likelihood of leaving abusive relationships (Kim & Gray, 2008).

The fourth level of barriers, according to Grigsby and Hartman (1997), concerns the connection between childhood abuse or neglect and adult victimization. Childhood experiences of abuse may lead to depression, anxiety, dissociation, post-traumatic stress, and other mental health difficulties (Cloitre et al., 2014; Read et al., 2014). Women with such trauma histories are more vulnerable to future abuse,

a phenomenon often described as the revictimization (Walker & Wamser-Nanney, 2023; Widom, 2024). Prior childhood abuse may shape expectations of intimate relationships in adulthood, where receiving love and care from an abusive partner can paradoxically represent the first experience of such affection. This can contribute to downplaying the risks of violence and remaining in the relationship, particularly if the current abuse is perceived as less severe than previous trauma (Grigsby & Hartman, 1997).

Research on the reasons for leaving an abusive partner indicates that leaving is a process that involves preparatory stages as well as the act of leaving itself (Baholo et al., 2014; Saunders, 2020; Wuest & Merritt-Gray, 1999). Internal and external changes that occur during the process of leaving serve as catalysts for this process. Internal changes include recognizing the abuse as unacceptable rather than normal or justified and shifting responsibility from the victim to the perpetrator (Anderson & Saunders, 2003; Choice & Lamke, 1997). Victims begin to question beliefs about their self-worth and whether they deserve abuse, which can lead to a sense of empowerment that brings them closer to the decision to leave. External changes that facilitate leaving include access to social support networks, public services, and economic resources that enable independent living (Anderson, 2007; Heron et al., 2022). Social support is essential for redefining the abusive experience and establishing an independent life (Baholo et al., 2014; Puente-Martínez et al., 2025). Turning points often occur when the abuse becomes life-threatening (Enander & Holmberg, 2008). Researchers also highlight emotional shifts, such as loss of hope, accumulation of anger (Ferraro & Johnson, 1983), fear for children's or one's own safety (Heron et al., 2022), deterioration of the relationship, or an increase in violence (Heron et al., 2022; Kurz, 1996; Patzel, 2001). Personal empowerment or cognitive shifts seeing the relationship as abusive are also critical for leaving an abusive partner (Burke et al., 2001; Kearney, 2001; Patzel, 2001).

Given that the reasons for staying or leaving an abusive partner are closely linked to victims' beliefs about violence, the abuser, and intimate relationships—formed within a specific sociocultural context—this study explores the reasons women in Serbia give for staying in or leaving abusive relationships. In Serbian society, traditional gender stereotypes and patriarchal norms still strongly shape perceptions of male and female roles in the family (Babović, 2010; Jugović et al., 2016). These norms often pressure victims to endure abuse for the sake of preserving the family, particularly for the well-being of children or due to societal expectations that marriage must be maintained "at all costs." Additionally, the stigmatization of women who "leave their husbands" and the normalization of violence through messages such as "endure it, it will pass" or "he didn't kill you, so what are you complaining about?" make it even harder for women to leave (Babović et al., 2010; Organizacija za Evropsku Bezbednost i Saradnju [OEBS], 2019). In this context, exploring how victims in Serbia explain their reasons for staying or leaving offers a deeper understanding of how personal decisions intersect with dominant societal discourses and can inform the development of more effective support and intervention strategies. Therefore, the central research question of this study is: How do women

who are victims of intimate partner violence in Serbia explain their reasons for staying with or leaving their abusive partners?

Method

Research Design

A qualitative research paradigm was employed to investigate the subjective experiences of women who have experienced intimate partner violence, with a particular focus on their reasons for remaining in or leaving abusive relationships. The research was guided by a realist epistemological perspective (Vilig, 2013), which assumes that experiences of violence reflect real conditions and consequences in the participants' lives, while also acknowledging that these experiences are interpreted and mediated through their personal and social contexts. From this standpoint, victims' accounts provide valuable insights into the dynamics of abusive relationships and the factors that enable or hinder leaving such relationships. Data were collected through in-depth interviews and analyzed using thematic analysis.

Participants

The study included 15 women who were victims of intimate partner violence and were, at the time of the research, residing in a safe house. This context made it possible to talk with them about both the reasons for staying with and the reasons for leaving their abusive partners. Demographic data were recorded, not with the aim of homogenizing participants' characteristics, but to better understand their diversity and individual narratives. The youngest participant was 30 years old, and the oldest was 74. Six participants were between 30 and 40 years old, five were between 40 and 50, and four were over 50. Seven women were employed, while eight were unemployed. Only one participant did not have children, while the others did. Some women stayed in the shelter with their children, while in some cases the children remained with their fathers. In most cases, the children were also exposed to violence. The duration of the abuse depended on the length of the intimate relationship, and for most women, violence had been present from the early stages of marriage or cohabitation. For eight women, the abuse lasted between 1 and 10 years; for four women, between 10 and 20 years; and for three women, more than 20 years. Three women had witnessed violence or experienced abuse in their family of origin. An informed consent form, which included information about the purpose of the study, was provided to each participant. Confidentiality, anonymity, and the right to withdraw from the study at any time were assured. At the time this research was conducted, there were no Institutional Review Boards (IRBs) in Serbia. The study was approved by a mentor and a commission appointed by the Council of the

Department of Psychology at the Faculty of Philosophy, University of Belgrade. The research was conducted in accordance with the Law on the Protection of Personal Data of the Republic of Serbia and with respect for all relevant ethical standards in the research process.

Data Collection and Processing

A semi-structured interview was used for data collection. Participants were given the opportunity to freely share their experiences of intimate partner violence, with minimal researcher intervention, or to respond to specific questions. Prior to the main phase of the study, a pilot study was conducted with three women who had survived violence, in order to refine potential themes and questions and assess their relevance to the research aim.

In the main study, each participant took part in three interviews. The first interview aimed to establish trust, introduce the research goals, and obtain informed consent. It also served to arrange technical details for the next meeting. This interview lasted approximately 30 minutes. The second interview focused on thematic questions related to understanding the reasons for staying with or leaving an abusive partner. Topics included: reflections on the perceived causes of the violence, justifications for the abusive acts, disclosure to or confiding in others, reactions and advice received, contact with relevant institutions, and thoughts about leaving or returning to the partner, as well as the reasons behind those decisions. This interview lasted around 60 minutes. With participants' consent, it was audio-recorded and transcribed, providing the basis for qualitative analysis. The third interview aimed to validate the preliminary analysis and interpretation. After the initial analysis of individual interviews, participants were invited to comment on the results and express their opinions on the accuracy of the researcher's interpretations (Vilig, 2013). This interview also provided an opportunity to revisit themes from the previous conversation—expand on them, emphasize those they found particularly important, or mention topics they had previously omitted. The third interview lasted approximately 30 minutes.

Data Analysis

An inductive thematic analysis was employed (Braun & Clarke, 2006; Vilig, 2013). Instead of predefined categories, thematic units emerged during the process of analysis, based on the content shared by the participants. The process included several stages: initially, segments of transcripts that were considered relevant to the research question were identified. Observations and preliminary comments were then noted alongside these segments. This was followed by the coding phase, which involved a thorough reading of the transcripts and the identification of meaningful units, which were labeled with appropriate codes. Codes were then grouped into

thematic units that were further refined and elaborated. These units were checked against the coded data and the overall content of the transcripts to ensure consistency. Finally, the main themes and subthemes were defined and named, and the data were interpreted to generate research conclusions.

Reflexivity

As a researcher and woman, I was aware that my personal and family context could influence the way I approached the topic of intimate partner violence, as well as my interpretation of participants' experiences. My personal values, beliefs about gender relations and family roles, and my sensitivity to issues of violence against women shaped both my research interest and my positioning in relation to the interviewees. Throughout the research process, I aimed to remain open to different perspectives and experiences, avoiding premature conclusions by relying on active listening, an ethical approach, and continuous reflection on my own assumptions. This reflexive stance helped me to recognize my own limitations and to engage with greater empathy and respect with the complexity of the decisions women make in the context of abusive relationships.

Results

During the process of data analysis and interpretation, the reasons for staying with or leaving an abusive partner were presented in several themes and subthemes. Below is a schematic overview of the identified themes and subthemes, accompanied by descriptions supported by quotes from the interviews.

Reasons for Staying with an Abusive Partner
1. Tolerance of "mild" forms of violence
2. Lack of resources
    2.1. No shelter — "I have nowhere to go"
    2.2. Economic dependence — "I have nothing to leave with"
3. Beliefs as barriers to ending the abusive relationship
    3.1. Preserving the family unit
    3.2. Religious and moral imperatives
    3.3. "Be silent and endure" — patriarchal norms and messages
4. Emotions as barriers to ending the abusive relationship
    4.1. Fear of escalation of violence or fatal outcome
    4.2. Hope for a change in the partner's behavior
    4.3. Shame and fear of social judgment
    4.4. Love for the partner
    4.5. Pity for the partner

Reasons for Leaving an Abusive Partner
1. Escalation and Perceived Threat as Catalysts for Leaving
2. Protection of children as a motivator for decision-making
3. Loss of hope and extreme exhaustion

Reasons for Staying with an Abusive Partner

1. Tolerance of "Mild" Forms of Violence

The violence experienced by participants varied in terms of severity of injury, intensity, and frequency. Over time, victims became accustomed to sporadic and less severe forms of physical violence, perceiving them as acceptable or insignificant compared to more severe injuries.

Evica: "*It wasn't often, it happened, but not that often. The physical violence wasn't that much; maybe one slap, grabbing by the throat, pushing, but I wasn't beaten like I hear other women are...*"

Experiences like Evica's suggest that women often do not recognize violence as serious until it becomes frequent and physically brutal. Compared to "more severe cases," occasional slaps or pushing are rationalized and tolerated. This relativization contributes to prolonged staying in a risky relationship.

2. Lack of Resources

This theme covers situations where women remain in abusive relationships due to a lack of basic resources for independent living. Conditions such as inability to secure housing, financial security, or support from close ones create a strong sense of entrapment and a lack of choice.

2.1. No Shelter – "I Have Nowhere to Go"

The absence of alternative accommodation and refusal of family members to take in the victim and her children leads women to perceive violence as a lesser harm compared to homelessness or social rejection. The feeling of having no one to turn to creates a vicious cycle of returning to the abusive partner.

Tara: "*My mother doesn't want me, my father died, no one in my family wants me with my child... I had to try twice to go back.*"

Tara emphasizes that lacking family support left her no choice but to return to the abusive relationship, demonstrating how social isolation reinforces dependence.

2.2. Economic Dependence – "I Have Nothing to Leave With"

Financial dependence directly ties the woman to the abusive partner. Lack of income, employment, or access to property limits the possibility of any form of exit from the relationship. Such economic vulnerability not only prevents leaving the partner but further weakens the sense of control over one's own life.

Dara: "*I have to find an apartment, I have to manage somehow, but what can I do when I have no income or anything anywhere.*"

Without a stable income, Dara does not see a realistic option to leave her partner, which forces her to remain in the relationship despite the violence.

3. Beliefs as Barriers to Leaving an Abusive Relationship

This theme encompasses deeply rooted personal, social, and cultural beliefs that make it difficult for women to decide to leave an abusive partner. Within this theme, three subthemes emerge that illuminate various sources and ways in which these beliefs manifest and are maintained.

3.1. Preserving the Family Unit

One of the key motives for staying in an abusive relationship is the belief that it is important for the children—and for the broader family image in society—that both parents remain together. Women who share this belief often prioritize the needs of the child and the ideal of a "complete family" over their own personal safety and well-being.

Kaća: *"I thought about whether the child would be happy without both parents... not to deprive them of their father."*

Kaća's belief in the importance of a "complete" family surpasses her own safety, as she believes the children would suffer from divorce. This perspective on family as a whole, whose structure must not be disrupted even in the case of violence, contributes to the prolongation of the abusive relationship.

3.2. Religious and Moral Imperatives

Among some participants, beliefs based on religious teachings and moral codes were identified, especially those related to the sanctity of marriage and the prohibition of divorce. Women raised in environments dominated by strict religious principles often internalize the idea that it is a moral obligation for a woman to stay with the father of her children regardless of the circumstances.

Nevena: *"I grew up in a family that respects the Ten Commandments... a mother should stay with the father of the children."*

In this excerpt, Nevena internalizes religious norms that stigmatize divorce, making it harder for her to decide to leave an abusive relationship.

3.3. "Be Silent and Endure"

Patriarchal messages transmitted through family and social heritage often shape the belief that women are meant to endure and sacrifice their own needs for the sake of preserving family peace and reputation. In this spirit, silence about violence is viewed as a virtue, and expressing resistance is seen as shameful. Such messages shift the focus from the abuser to the woman, normalize violence, and further hinder the break from an abusive partner.

Tara: *"A woman has to endure something for the sake of the family's well-being and preservation... people will laugh..."*

This quote illustrates how inherited messages of silence and endurance place blame on the woman, maintaining the status quo and impeding open resistance.

The beliefs described function as psychological barriers that do not stem solely from individual attitudes but are shaped by broader social norms, religious teachings, and traditional gender roles. These beliefs often legitimize staying in an abusive relationship by redirecting responsibility onto the woman while simultaneously

suppressing her needs and safety for the sake of preserving family, morality, and social reputation.

4. Emotions as Barriers to Leaving an Abusive Relationship

In addition to rational beliefs and social norms, emotional factors play a powerful role in maintaining abusive partnerships. Emotions, which are a natural part of any close relationship, become complex and often contradictory in the context of violence, further complicating the decision to leave. This thematic unit encompasses various affective dynamics that act as invisible forces keeping women tied to abusive relationships.

4.1. Fear of Escalation of violence or Lethal Outcome

Fear of escalating violence or death following an attempt to leave the partner represents one of the strongest emotional motives for staying. Women live in a constant state of danger and believe that trying to exit the relationship could worsen the situation and threaten their lives.

Sneža: *"Then I was afraid to leave him; I thought he might kill me..."*

Sneža's statement illustrates how the threat of death traps victims in the relationship, blocking attempts to end the partnership.

4.2. Hope for Change in Partner's Behavior

Hope for a change in the partner's behavior relies on memories of the partner's conduct from the period before the violence, as well as the desire to repair the damaged relationship. Women who nurture this emotion often believe that the aggressive behavior is temporary or caused by external circumstances, and therefore postpone ending the relationship in anticipation of a "return" to the former, better relationship.

Anica: *"I knew... I hoped he would change because he wasn't violent before."*

Anica's hope delays the final decision to leave, relying on memories of a period without violence.

4.3. Shame and Fear of Social Judgment

Shame as a consequence of the destruction of the family image and fear of probable social condemnation strongly influence the decision to remain silent about the violence and stay in the relationship. Women feel responsible for not maintaining a "normal" family and fear others' comments, which further intensifies their isolation.

Kaća: *"I grew up in a family that was 'normal,' by some standards, with both a mother and a father, and some traditions were respected... and well... maybe I was ashamed to get divorced because people wouldn't understand."*

In this case, shame motivated Kaća to conceal the violence and delay leaving, reflecting societal norms about the woman's role as guardian of family integrity and honor.

4.4. Love for the Partner

Despite violent episodes, love for the partner remains a strong factor complicating separation. Emotional attachment hampers rational risk assessment

and contributes to justifying the violence through idealization of the partner or the relationship.

Gorica: *"I loved him, I love him... I can't say I hate him now, like some women say their deceased husbands are saints... I can hate what he does, but I can't hate him because, deep down, he's a good person, really good."*

Gorica's quote illustrates the emotional ambivalence that complicates leaving an abusive relationship. Although she recognizes the violence as problematic, she separates the partner's behavior from his personality, insisting on his "good core." Love and idealization reduce the perception of risk and act as barriers to rational decision-making.

4.5. Pity for the Partner

Pity and a sense of responsibility for the partner's fate can lead a woman to stay in the relationship—not out of love, but out of care. Fear of his loneliness, poverty, or social downfall creates emotional blackmail, in which the woman sees herself as the only person who can "save" him.

Dunja: *"I'm with him out of pity, not love... and I endured all of it myself so that he would have a roof over his head and I supported him all these years."*

Dunja justifies her sacrifice by caring for her partner's fate, demonstrating how compassion can be a strong cohesive factor.

The emotions connecting a woman to an abusive partner are often contradictory and intertwined, creating inner confusion and blocking decisiveness to leave. In the context of violence, emotions do not function as guides to personal well-being but as complex psychological mechanisms of survival, attachment, and rationalization of abuse. Fear, hope, shame, love, and compassion do not act in isolation but within a complex web of mutual influences that collectively shape the woman's relationship to her partner and her situation.

Reasons for Leaving an Abusive Partner

Although women in abusive relationships often face numerous obstacles that hinder them from leaving their partner, many still make the decision when their internal capacity to endure or external circumstances reach a critical point. Analysis of the narratives identified three key themes that illuminate the factors contributing to ending the abusive relationship: Escalation and Perceived Threat as Catalysts for Leaving, Protection of children as a motivator for decision-making and Loss of hope and extreme exhaustion.

1. Escalation and Perceived Threat as Catalysts for Leaving.

For many participants, the decision to leave an abusive partner was triggered by heightened danger, either through the escalation of violence or the perceived threat of further harm. Some women left when episodes of violence became severe and life-threatening.

As Anica recounted, *"And then, in the end, the violence really escalated, when I realized I could die, I left. I realized he could have killed me."*

Her testimony illustrates how the tolerance threshold shifts when physical survival becomes the primary concern, creating a clear turning point. Similarly, fear of retaliation also acted as a catalyst for leaving. In situations where the abuser had been reported or detained, participants described leaving preemptively out of concern for what might happen upon his return.

Kaća explained, *"...who knows what might come to his mind, so we grabbed the most important things... and went to a friend's studio apartment."*

This statement highlights that violence is not always perceived as a concluded act but as a persistent threat that can escalate, prompting immediate action to escape. Together, these accounts emphasize that both actual escalation and anticipated danger are critical motivators for women's decisions to leave abusive relationships.

2. Protection of children as a motivator for decision-making.

For most participants, violence directed at their children became unacceptable and triggered an urgent need to end the relationship.

Miona: *"..When he started beating my children, hitting them... I couldn't endure anymore."*

Miona's statement illustrates how a victim, despite having tolerated violence towards herself, decides to leave to protect her children, which becomes a decisive motive.

3. Loss of hope and extreme exhaustion.

For some participants, leaving the partner comes only after years of suffering, when exhaustion and disappointment become unbearable.

Suzana: *"...when I saw I no longer had the strength to even stand on my own, I left that house weighing 36 kilos... I don't believe anything can change."*

Suzana's narrative shows that the decision to leave can occur even when there is no longer any expectation of change, indicating an emotional and physical limit of endurance.

Discussion

The study identified themes related to the reasons for leaving and staying with an abusive partner. Regarding the reasons for staying with an abusive partner, participants referred in their explanations to tolerance of less severe forms of violence, lack of resources, and beliefs and emotions that acted as barriers to leaving the abusive relationship.

The research results indicate that over time, participants develop tolerance toward "milder" forms of violence, relying on rationalization. If violence is perceived as less severe, they are less likely to make the decision to leave. The connection between the intensity of violence and the decision to stay or leave an abusive partner has also

been confirmed in other studies (Barnett, 2001; Heron et al., 2022). Additionally, participants did not leave abusive partners due to the lack of social support and economic dependence. According to Ferraro and Johnson (1983), the absence of support from family members contributes to the victim's belief that there is no alternative and that they must tolerate the violence. The lack of a safe place to go after leaving the partner is one of the existential reasons victims remain with abusive partners (Davis, 2002; Short et al., 2000). Furthermore, economic dependence on the partner is considered one of the most common reasons for staying with an abusive partner (Anderson & Saunders, 2003; Barnett, 2000; Johnson et al., 2022; Stylianou, 2018). Victims are unable to leave abusive relationships, regardless of how harmful or dangerous they are, due to lack of financial means and lack of alternative accommodation (Davis, 2002; Hargrave et al., 2024). These two reasons (lack of social support and economic dependence) frequently overlapped in the victims' narratives.

The study results also show that the decisions made by participants were influenced by various beliefs. Participants linked their decisions to stay with abusive partners to beliefs about the importance of keeping the family intact and to religious convictions. Other studies also confirm that the choice to stay can stem from a mother's desire for the child to grow up with both parents, based on the belief in preserving family unity (Barnett, 2001; Bukvić, 2008; Heron et al., 2022). Moreover, adopted religious beliefs, supported by patriarchal norms discouraging divorce despite violence, can influence women not to leave their partnerships (Grigsby & Hartman, 1997; Levitt et al., 2015). The emphasis on the sanctity of marriage, regardless of the cost to individual family members, is a principle upheld by many religious and political groups in their interpretation of family values (Marano, 1997; Whipple, 1987; Wood & McHugh, 1994; as cited in Barnett, 2001).

The role of retaining women in abusive intimate relationships is also reflected in upbringing messages they received from childhood, such as "be silent and endure." These messages reflect a patriarchal value system promoting female obedience, suffering, and responsibility for preserving the family at all costs (Childress et al., 2023; Dobash & Dobash, 1992). The internalization of such norms contributes to feelings of guilt, shame, and fear of social judgment, further complicating the decision to leave the abusive relationship (Mdletshe & Makhaye, 2025; Nikolić-Ristanović, 2002).

In their narratives, victims of intimate partner violence also spoke about certain emotions that kept them in the abusive relationship. One such emotion is the fear of escalation of violence and fatal outcomes. Findings from other studies likewise indicated that fear is one of the primary reasons why women do not leave their abusers (Barnett, 2001; Bukvić, 2008; Kim & Gray, 2008; Rezaei et al., 2025). Leaving the partner does not necessarily mean the end of violence, and fear often persists even after separation (Kurz, 1996). Furthermore, participants did not leave their partners as long as they hoped that the violence would end, that their partners would change, and recognize their mistakes. This hope is sustained by the so-called honeymoon phase in the cycle of violence (Hughes, 2008; Mamula & Ajduković, 2004). During this phase, the abuser shows remorse and makes promises to change, creating an illusion of control that reinforces the victim's hope and decision to stay

(Anderson & Saunders, 2003; Heim et al., 2018). Memories of earlier times when the partner was not violent also sustain this hope. Even the most violent men are not violent all the time, which forms the basis for the belief that violence is an exception and that the "real man" would not threaten them (Ferraro & Johnson, 1983).

An additional mechanism that, according to participants' accounts, contributed to staying in the abusive relationship is a strong feeling of shame and embarrassment. These emotional states stem from dominant societal discourse that treats domestic violence as a "private matter," and women who speak out about abuse are often perceived as "airing dirty laundry" (Nikolić-Ristanović, 2002). Internalization of such messages leads victims to experience guilt, self-blame, and fear of judgment, which further isolates them and prevents them from seeking help (Herman, 1992; Murvartian et al., 2023; Walker, 1979).

Moreover, some participants reported that they did not leave their partners because they felt love for them. Research shows that victims can differentiate between the abuser's personality, which they love, and the abusive behavior, which they do not, allowing them to remain emotionally attached to the "real nature" of the partner and not leave (Boonzaier & De La Rey, 2003; Enander, 2011; Heron et al., 2022; Towns & Adams, 2000). Additionally, construing and presenting the partner in a romanticized way (e.g., as a person in whom they found everything, who supports them, someone who will always be there for them) contributes to not leaving the abusive partner (Boonzaier & De La Rey, 2003; Jackson, 2001; Towns & Adams, 2000).

Feelings of pity toward the abuser also functioned to retain participants in the abusive relationship. This finding aligns with attachment trauma theory (Dutton & Painter, 1993) and research showing that victims often develop empathy toward their abusers, justifying their behavior by referring to personal difficulties or vulnerabilities (Anderson & Saunders, 2003; Effiong et al., 2022). Pity may be part of a broader pattern of emotional dependency, wherein victims feel responsible for the partner's emotional state, further complicating the process of leaving the abusive relationship.

When it comes to reasons for leaving an abusive partner, the participants referred in their accounts to several key factors: the escalation of violence and fear of retaliation, violence against children and the loss of hope and exhaustion. Some participants reported normalizing certain forms of violence, but once the abuse exceeded what they perceived as "usual," or when it became unpredictable, they decided to leave. Previous research similarly showed that victims rarely leave after the first violent incident. Although thoughts of leaving may arise earlier, the actual decision is often made following a "turning point" or "critical incident" (Enander & Holmberg, 2008; Kearney, 2001; Patzel, 2001). One such critical moment identified in the narratives was violence against children. Other studies have also found that harm directed at children is often the trigger or decisive moment for leaving an abusive partner (Davis, 2002; Enander & Holmberg, 2008; Heron et al., 2022; Patzel, 2001).

Participants also described emotional states and internal dilemmas accompanying the decision-making process about leaving the abusive relationship.

Their narratives suggest that these emotions should be understood as part of a dynamic continuum—while they still held hope that their partner might change, they remained in the relationship; the loss of that hope emerged as a critical moment that shifted them toward the decision to leave. These findings are consistent with prior research indicating that women often stay in abusive relationships hoping for change, and that the loss of such hope represents a key psychological shift enabling the termination of the abusive relationship (Baholo et al. 2014; Caridade et al., 2020; Goodman et al., 2003). Furthermore, fear of retaliation or increased violence played an ambivalent role: in some cases, it kept women in the relationship, while in others, it acted as a catalyst for leaving. Research confirms that fear of the abuser may operate in a dual way—both as a barrier to leaving (European Union Agency for Fundamental Rights [FRA], 2014; WHO, 2013), and as an immediate trigger for exit when a woman assesses that staying could result in severe injury or even death (Heron et al., 2022; Kurz, 1996; Patzel, 2001).

This study clearly illustrates the complexity of decisions surrounding staying in or leaving an abusive partner, which are deeply intertwined with numerous personal, social, and cultural factors. The decision-making process is not an immediate reaction, but rather a prolonged and often painful journey during which victims confront internal dilemmas, conflicting emotions, and external pressures. Understanding this complexity allows us to view intimate partner violence not merely as an individual problem, but as a deeply rooted social phenomenon that demands attention on multiple levels.

One of the key strengths of this study lies in its focus on the experiences of women residing in a safe house, which enables a nuanced understanding of the specific challenges and decision-making mechanisms among survivors of partner violence who have taken the initial step toward leaving an abusive relationship. The use of semi-structured interviews allowed for the collection of rich, detailed, and nuanced narratives, while the application of thematic analysis enabled the systematic identification of key themes and patterns in the participants' experiences. This qualitative approach offers insight into subjective perceptions and internal dilemmas that often go unnoticed in quantitative research.

However, the study has certain limitations. Gathering data exclusively from women residing in a safe house may limit the generalizability of the findings to all victims of intimate partner violence, particularly those who have not sought or had access to such support services. Additionally, it is possible that the participants' narratives were influenced by their current circumstances, which could shape the way they perceive and interpret their past experiences. Furthermore, due to the nature of qualitative research and the small sample size, the results cannot be considered statistically representative, but they do provide valuable in-depth insights that can serve as a basis for further, broader studies.

The findings of this study have important practical implications. The complexity of the decision-making process around staying or leaving an abusive partner highlights the need for multidimensional support tailored to different phases of a woman's experience. First, interventions should aim to empower women to recognize and critically reflect on

beliefs that hinder their ability to leave—such as idealization of the partner, religious and patriarchal norms, and tolerance of milder forms of violence. Fostering emotional and psychological self-awareness is crucial for overcoming the mental barriers that delay the decision to leave. Second, it is essential to ensure the availability of stable and accessible resources, including safe shelters, financial assistance, and legal protection, since without concrete options for housing and independent living, exiting an abusive relationship remains difficult to achieve. Third, support must be especially attuned to identifying and responding promptly in critical moments such as the escalation of violence, violence against children, fear of retaliation, and emotional exhaustion. These are the moments when women are most likely to make the decision to leave, and therefore, support systems must be readily available and effective at those times, through emergency measures and continuous psychosocial assistance. Finally, ongoing education and sensitization of professionals working with survivors of violence are crucial, to ensure that their interventions are aligned with the needs of women at different stages of the abusive relationship—from enduring and rationalizing the abuse, through recognizing the threats, to empowerment for definitive separation and recovery. Such an integrated approach enables comprehensive support that both understands and addresses the barriers to leaving an abusive relationship and the motivating factors that ultimately lead women to break free, thereby increasing their chances for a safer and more autonomous life.

Conclusion

This study provides insight into the complex and multilayered reasons why women remain in abusive intimate relationships, as well as the factors that ultimately motivate them to leave their abusers. Key themes identified include the characteristics of the violence experienced, lack of resources, internalized beliefs, patriarchal norms, and emotional attachments to the partner. The findings also underscore that the decision to leave an abusive partner is often a prolonged and emotionally challenging process, marked by phases of hope, fear, doubt, and eventual resolution. Particular attention is warranted in understanding the role of violence against children, escalation of abuse, and fear of retaliation as critical turning points that may trigger a woman's decision to exit the relationship. The results of this research contribute to a deeper understanding of the psychological, social, and cultural barriers faced by victims, as well as the internal motivations and dilemmas that shape their decisions. These insights hold significant value for the development of support systems and interventions that are better aligned with the real-life needs and experiences of women subjected to intimate partner violence.

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Iza odluke: Razumevanje razloga za ostanak ili napuštanje nasilne veze

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Apstrakt

Nasilje nad ženama u partnerskim odnosima predstavlja ozbiljan društveni problem sa značajnim negativnim posledicama po žrtve, njihove porodice i društvo u celini. Razumevanje razloga zbog kojih žene ostaju u ili napuštaju nasilne veze ključno je za razvoj efikasnih preventivnih i interventnih mera. Cilj ovog istraživanja bio je da se ispitaju razlozi zbog kojih žene žrtve partnerskog nasilja ostaju u, odnosno napuštaju nasilne veze. Studija je sprovedena na uzorku od 15 žena smeštenih u sigurnoj kući, a podaci su prikupljeni polustrukturiranim intervjuima i analizirani tematskom analizom. Rezultati su pokazali da su ključni razlozi za ostajanje sa nasilnim partnerom povezani sa tolerancijom na slabije oblike nasilja, nedostatkom socijalnih i ekonomskih resursa, usvojenim patrijarhalnim vrednostima, religijskim uverenjima, emocionalnom vezanošću, kao i strahom i osećanjima stida. Nasuprot tome, odluku o napuštanju nasilnog partnera obično pokreću eskalacija nasilja, nasilje nad decom, gubitak nade u promenu partnera i strah od odmazde. Istraživanje ističe složenost procesa donošenja odluka kod žena koje trpe partnersko nasilje i naglašava potrebu za sveobuhvatnom podrškom koja uzima u obzir njihove psihološke, socijalne i kulturne okolnosti

Ključne reči: žrtve, partnersko nasilje, ostanak sa nasilnim partnerom, proces napuštanja

The Relationship Between Basic Psychological Needs in the Workplace and Job Satisfaction: A Self-Determination Theory Perspective [1]*

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Abstract

The conducted research aimed to determine the relationship between basic psychological needs (BPN) in workplace and job satisfaction. More precisely, we wanted to examine whether job satisfaction can be predicted based on dimensions of BPN. Also, we examined the relationship between job satisfaction and sociodemographic variables (gender, education level, employment status, years of service with the current employer, workplace model and sector/industry, age, years of service, years of worke experience and salary). To achieve this goal, a new psychological measurment instrument constructed for the purposes of the author's master's thesis was applied. The research was conducted on a sample of 226 participants. The results of the study confirmed that all three BPNS (the need for autonomy, the need for competence/ structure, and the need for relatedness) have a positive, statistically significant, and strong correlation with job satisfaction. Furthermore, the obtained results show that job satisfaction can be predicted based on these BPNs. The findings also indicate that job satisfaction is in weak positive correlations with age, years of service, years of worke experience and salary. The research also confirmed that the metric characteristics of the applied measurment instrument are satisfactory.

Keywords: self-determination theory, job satisfaction, need for autonomy, need for competence, need for relatedness

The Relationship Between Basic Psychological Needs in the Workplace and Job Satisfaction: A Self-Determination Theory Perspective

Two of the three basic clusters of individual differences, intelligence and personality traits, are significantly biologically predetermined and, as such, represent givens that are difficult to change (Plomin, 2018). Therefore, organizational efforts to maximize or at least improve individual performance in the workplace must necessarily focus on motivation as the only cluster of individual differences significantly susceptible to organizational influences (Đuranovićć, 2021). Given the known, significant limitations of extrinsic motivation, it is logical for organizations to question whether it is possible to influence intrinsic motivation to improve work efficiency of an individual. One of the possible answers to this question is offered by self-determination theory, so the aim of this paper is to investigate the relationship between this theory and job satisfaction, which in turn significantly contributes to work efficiency, and to check the metric characteristics of the applied psychological measurment instrument.

Self-Determination Theory

Self-Determination Theory (SDT) is classified as a macro theory, providing a broad framework for studying human motivation and personality as a whole, as well as social development and overall psychological functioning and well-being. Deci and Ryan (1985) authors of SDT proposed a taxonomy of motivations and three sub-theories: the theory of basic psychological needs, the theory of cognitive evaluation, and the theory of organismic integration .

Sub-theory of Basic Psychological Needs (BPNT) referes on three basic psychological needs that motivate the self to initiate behavior (though self-determination is not only determined by the level of fulfillment of basic psychological needs): the need for autonomy, the need for competence, and the need for relatedness (Deci & Ryan, 1985). According to BPNT, the satisfaction or frustration of autonomy, competence, and relatedness affects both motivation and the growth and development of the individual. This subsequently influences their behavior and results in their overall sense of (dis)satisfaction (Deci & Ryan, 1985).

Sub-theory of Cognitive Evaluation (CET) describes a taxonomy of different motivations based on the degree of their internalization (Deci & Ryan, 1985). According to CET, intrinsic, autonomous, or internal motivation is a natural, inherent drive of individuals for continual growth and development. This motivation stems from the innate psychological needs of each individual and does not have an external goal such as a reward for the activity. It provides an explanation of the phenomenon known as "motivational crowding out," which describes how external factors or environmental influences can affect and impact intrinsic motivation (Deci & Ryan, 1985).

Sub-theory of Organismic Integration (OIT) provides the explanation of various ways of regulating controlled, i.e. extrinsically motivated behavior (Deci & Ryan, 1985). Extrinsic/controlled/external motivation refers to motivation that originates from external sources that encourage/stimulate, or discourage/de-stimulate certain types of behavior. OIT identifies four distinct types of extrinsic motivation based on their degree of autonomy. Starting from the lowest degree of authonomy they are: (a) externally regulated behavior, (b) introjected regulation, (c) regulation through identification, and (d) integrated regulation. According to OIT, extrinsically motivated behaviors can be integrated into the self, but for this integration to occur, the environment must ensure that the individual feels autonomous, competent, and related. This concept, the concept of autonomous extrinsic motivation (AEM), i.e., the explanation of transformation of extrinsic into intrinsic motivation, is the key innovation brought by SDT. This means that the environment determines whether a behavior will be externally regulated, introjected, a result of identification, or full integration into the self (Deci & Ryan, 1985).

Job Satisfaction

There are different definitions of the term job satisfaction (JS), but what most authors (Locke, 1976) agree on is that JS is a complex measure of worker satisfaction with their job (Spector, 1997). Therefore, job satisfaction can be defined as a complex attitude that includes certain assumptions and beliefs about the job, as well as an evaluation of the job (Hulin, & Judge, 2003). Like any attitude, job satisfaction is a complex phenomenon that encompasses three basic components:
- *cognitive* - consists of thoughts and beliefs about the object of the attitude (the job), formed based on what a person believes they know about it;
- *affective* - consists of feelings for the attitude object (the job), and is expressed through the range of emotions one might have towards it;
- *conative* - is the inclination toward certain behaviors or actions in relation to the attitude object (the job), as a consequence of the interaction between the previous two components (Hulin, & Judge, 2003).

Given that job satisfaction is a complex attitude, employees can be satisfied with some aspects of their job while simultaneously being dissatisfied with others. That means that job satisfaction is a multidimensional psychological response of an individual to their job (Hulin, & Judge, 2003).

Taking the complexity of the job satisfaction construct, it is clear that there are some difficulties associated with measuring it. There are two approaches to the operationalization of job satisfaction: the holistic approach, according to which job satisfaction is perceived as a unidimensional construct that represents a general attitude of a person towards their job, and the facet approach, according to which job satisfaction is seen through multiple aspects, treating it as a multidimensional construct (Spector, 1997).

Since job satisfaction typically reflects an overall affective response to work,

this research adopted a holistic approach to its operationalization to capture a general dimension that reflects overall job contentment. Taking this approach and treating JS as an 'single-faceted' construct contribute to simplifingthe measurement process, and therefore enhancing interpretability by providing a more clear and straightforward measure of how satisfied individuals are with their job.

The connection between BPN as defined by SDT and job satisfaction was previosuly established through multiple reserch (Brunelle & Fortin, 2012; Decker & Van Quaquebeke, 2014; Fernandez & Moldogaziev, 2013; Takahashi et al., 2014; Đuranović, 2021). Researchers have shown that when employees experience high levels of autonomy, competence/structure and relatedness in their workplaces, they are more likely to report greater job satisfaction. Conversely, a lack of fulfillment in these areas can lead to dissatisfaction, highlighting the significant impact of BPN on job-related outcomes. For example, Brunelle and Fortin (2012) found that fulfilling BPNs significantly predicts job satisfaction and that employees who perceive their needs as met, tend to report higher job satisfaction and overall well-being in their work environment. Fernandez and Moldogaziev (2013) examined the effect of BPN fulfillment on job satisfaction in the public sector and concluded that meeting employees' basic psychological needs positively effect their job satisfaction and commitment to their organization, reinforcing the role of SDT in understanding employee motivation. Decker and Van Quaquebeke (2014) conducted reasearch investigating the importance of autonomy in enhancing job satisfaction. Results showed that when employees feel autonomous in their roles, they are more likely to experience higher job satisfaction. Also, in their longitudal study that took place from 2004-2013, Takahashi et al. (2014) found that job satisfaction is closely related to the fulfillment of BPN, confirming strong linear correlation between the job satisfaction ratio and the degree of self-determinatio. Authors pointed out that occupation and rank tend to determine the band of fluctuation with respect to the degree of self-determination indicating that the relationship could be influenced by contextual factors. Strong correlation between BPN and job satisfaction was also confirmed by the study Đuranović (2021).

In previous research the relationship between sociodemographic variables and job satisfaction has also been explored (Clark, 1997; Đuranović, 2021; Kautonen et al., 2013; Ng & Feldman, 2010; Spector, 1997). Ng and Feldman (2010) based on the results of meta-analysis concluded that chronological age is associated with more favorable job attitudes, though the strength of this relationship is weak to moderate, highlighting the need for further research and theoretical development in this area. Similarly, Spector (1997) found mixed results when it comes to relationship between gender and job satisfaction pointing out that more research is needed to understand the underlying reasons for observable differences in how men and women experience job satisfaction and how that manifests in various work environments. Clark (1997) also investigated relationship of gender but also education with job satisfaction, and came to the conclusion that education alone does not determine satisfaction. Kautonen et al. (2013) conducted a study of the relationship between employment status and job satisfaction. Based on the results author indicated that there was a link between general employment status and job satisfaction, but emphasized that the study did not not address the specific implications of varying employment types, calling for additional

studies to explore these specific areas more thoroughly. Đuranović examined the relationship between sociodemographic variables and job satisfaction in 2021, and the results of the research showed that the respondents were equally satisfied with their jobs regardless of gender, age, education, type of employment (temporary or permanent), years of work experience, years of employment, and years with their current employer.

The goal of present research is to contribute to the understanding of how BPN in the organizational context and sociodemographic variables predict job satisfaction. Threfore, the primary aim of this research is is to examine the relationship between the BPNs in the workplace and JS among employees i.e. answer following research questions:

1. What is the relationship between the basic psychological needs in the workplace, as defined by self-determination theory, and job satisfaction among employees?

2. Can job satisfaction be predicted based on the basic psychological needs in the workplace, as defined by self-determination theory?

3. What are the socio-demographic correlates of job satisfaction among employees?

The research will also test the psychometric characteristics of the applied instrument.

Method

Sample and Prodecure

The sample in this study was of a convenient nature and included 226 actively employed respondents. All necessary data was collected online. The questionnaires were created in Google Forms and distributed via various social media and online communication channels (LinkedIn, Facebook, Viber, Telegram, Discord). Participation in the research was voluntary and anonymous. Complete overview of socio-demographic characteristics of the sample is shown in Table 1.

Table 1
Characteristics of the Research Sample

	Frequency (n)	Percentage (%)
Gender		
Female	140	61.9
Male	86	38.1
Education		
Primary	1	0.4
Secondary	31	13.7
Higher	14	6.2

University	94	41.6
Master's	73	32.3
Postgraduate	5	2.2
Doctorate	8	3.5
Employment Status		
Permanent Full and Part-time	191	84.5
Temporary Full-time and Part-time	35	15.5
Workplace model*		
On-site	141	62.4
Hybrid	52	23.0
Remote	33	14.6
Sector**		
Primary	33	14.6
Secondary	33	14.6
Tertiary	160	70.8
Salary		
Below average	37	16.4
Average	64	28.3
Above average	125	55.3

Note. *Workplace model: On-site - meaning they perform their job duties at a designated physical location, such as an office or facility; Remotely - online; Hybrid - combining both on-site and remote(online) work. **The primary (extractive) sector included: agriculture, hunting, fishing, forestry, mining, quarrying, oil and gas extraction, etc.; the secondary (production) sector included: production and construction (residential, commercial, infrastructural, industrial, renovation and remodeling, etc.); while the tertiary (service) sector is made up of: trade (retail, wholesale, e-commerce), tourism and hospitality, financial services, health and social protection, educational, research and cultural activities, information technology and telecommunications , media and entertainment industry, printing and publishing, sports, legal, marketing and other consulting services, transport and logistics, communal services (production and distribution of thermal energy, water and sewage services, waste management and recycling services, etc.), government and public services (ministries, army, police, etc.), non-profit organizations (charities, foundations, non-governmental organizations, etc.).

Variables and Instruments

Variables used in the research:
1) Sociodemographic variables - independent variables that included: gender, education level, age, employment status, years of service; years of work experience, years of sevice with current employer, workplace model, industry/sector, salary level, salary satisfaction;
2) Basic psychological needs - predictor variables representing three BPN in workplace (support of need for autonomy (PA), support of need for

competence/structure (PS), and support of need for relatedness (PU));
3) Job satisfaction - criterion variable.

Workplace Basic Psychological Needs Support Assessment (W-BPNSA, **Đuranović, 2021**), an instrument related to BPN as defined by SDT. Istrument contains three subscales to operationalize support of need for autonomy (PA), support of need for competence/structure (PS) and support of need for relatedness (PU) at the respondent's current workplace (Đuranović, 2021). Three subscales consistes of 45, 39 and 46 items, respectively. Respondents rated their agreement with each itme on a five-point Likert scale, where 1 represents complete disagreement and 5 complete agreement. The scores on the scales were obtained by summing all the items that constitute a specific need. Since all items were formulated in a positive direction, a higher score on each subscale indicates a greater expression of the respective need. The complete overview of this instrument is presented in the appendix.

An instrument related to job satisfaction (Đuranović, 2021), that assessed JS through three identical statements, "I am satisfied with my job," with responses formatted in different ways: on a 1-5 Likert scale (to allow respondents to express varying degrees of satisfaction with nuanced options, providing a range of responses that can capture subtleties in feelings and opinions.), a 1-100 scale (to offer a continuous scale for greater granularity, enabling respondents to indicate their satisfaction with a precise score; this level of detail can reveal more nuanced differences in satisfaction levels, making it useful for analyses that require fine distinctions), and a binary Yes/No scale (designed to simplifies responses and directly capture the respondents' subjective assessment of their satisfaction without introducing ambiguity). The straightforward nature of the statement makes it easy for respondents to understand and answer honestly, and providing different response formats (Likert scale, 1-100 scale, and binary Yes/No scale) allows for a comprehensive analysis of how varying scales may influence the distribution of responses and ensure robustness in measuring the construct across different methods. This variety also ensures that the findings are not dependent on a single response format, enhancing the reliability and validity of the measurement.

The research within which a psychological measurement instrument used in this study was constructed, was conducted in two phases. The first phase involved a pilot study to verify the metric characteristics of the measurement instrument, which, after appropriate corrections, was used in the main study during the second phase. Data for both phases was collected online.

The questionnaire was based on the author's personal understanding of SDT and previous work experience. The formulation and selection of the items used in the questionnaire were done independently by the author, under the mentorship of Prof. Dr. Jasmina Nedeljković. Initially, the questionnaire consisted of 248 questions across 5 parts, with the first part focusing on demographic data and the remaining parts covering the three subscales (PA, PS, PU), with 79 statements each, and JS, examined through 3 questions, in the exactly the same manner as in this study.

In the pilot study, 46 respondents participated, and the instrument's reliability was tested using Cronbach's alpha coefficient, indicating satisfactory reliability,

overall and for each subscale (Đuranović, 2021). The pilot study demonstrated that each scale has high reliability (.89 – PA; .86 - PS; .89 - PU), indicating a strong correlation between individual items. The overall scale also showed a very high reliability coefficient, close to 1 (.95 - total), suggesting that the three scales are interconnected and collectively provide reliable results.

Further inspection revealed that reliability could be enhanced by removing certain items. This led to the deletion of repetitive or less reliable items, resulting in the final questionnaire form with 45, 39, and 46 items for PA, PS, and PU, respectively. This refined questionnaire was used in the second phase of the study with 162 participants, where the metric characteristics were confirmed to have improved reliability as measured by Cronbach's alpha coefficient (.96 – PA; .97 - PS; .98 – PU and .99 - total).

To verify the reliability of the questionnaire on the sample used in this study, the Cronbach's Alpha (α) reliability coefficient was examined for all subscales, as well as for the overall scale.

Table 2.

Reliability of the Questionnaire and its Subscales on the Sample Used in This Research

	Number of items	α coefficient
Support of autonomy (PA)	45	.96
Support of competence/structure (PS)	39	.97
Support of relatedness (PU)	46	.98
Total scale	130	.99

Each scale demonstrates high reliability, with coefficients near 1, indicating a strong correlation between individual items. The overall scale also shows a very high reliability coefficient, suggesting that the three scales are interconnected and collectively provide reliable results.

Based on these results and comparative analysis of these results with the reliability verification of the measurement instrument on the initial sample (showing almost identical results) confirms that the scales are reliable and valid for basic psychological needs.

Statistical analysis

The Statistical Package for the Social Sciences (IBM SPSS Statistics 26) was used for data entry and analysis. Statistical methods included descriptive and inferential statistics. Descriptive statistics described the sample and provided descriptive indicators of the variables. Inferential statistics answered the research questions using:

- Correlation Techniques: Pearson correlation coefficient (PCC) for the relationship between BPNs as defined by SDT and job satisfaction; Spearman correlation coefficient (SCC) for socio-demographic correlates of job satisfaction.
- Multivariate Regression Analysis: Multiple linear regression (MLR) to determine if job satisfaction can be predicted based on BPNs as defined by SDT.

To check the reliability of the measurement instrument, Cronbach's Alpha (α) was used to assess internal consistency. The standard significance level of $p < .05$ was applied for all statistical tests.

Results

The presentation of the results is organized according to the research questions. Before addressing them, descriptive statistics were conducted, and results are presented in Table 3.

Table 3.
Descriptive Statistics of Variables

	N	Min	Max	M	SD	Sk	Ku
Age	226	23	59	39.51	7.29	-0.25	-0.16
Years of Service	226	0	40	13.51	7.39	0.27	-0.12
Years of Work Experience	226	1	40	15.28	7.26	0.14	-0.20
Years of Service with Current Employer	226	0	30	6.95	6.80	1.20	0.42
Support of autonomy (PA)	226	1.67	4.89	3.42	0.80	-0.11	-1.01
Support of competence/ structure (PS)	226	1.67	5.00	3.56	0.80	-0.18	-0.79
Support of relatedness (PU)	226	1.46	5.00	3.65	0.86	-0.42	-0.63

Note. N - number of respondents in the sample; M – arithmetic mean; SD - standard deviation; Sk – Skewness; Ku - Kurtosis

The descriptive indicators show range of scores (from 1.46 to 5 and 1.67 to 5) for each BPN, indicating satisfactory variability in respondents' perceptions of support for PA, PS, and PU at their workplaces. Also, skewness and kurtosis values fall within acceptable ranges and do not indicate significant deviations from the normal distribution of the data, except for a slight positive skew in years of service with the current employer.

Table 4.

Job Satisfaction - YES/NO

	Frequency (n)	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
YES	162	71.7	71.7	71.7
NO	64	28.3	28.3	100.0

Most respondents (71.7%) stated they are satisfied with their job when asked to respond "yes" or "no" to "*I am satisfied with my job.*"

Table 5.

Job Satisfaction Expressed on a Scale from 1 to 5, and a Scale from 1 to 100

	N	Min	Max	M	SD	Sk	Ku
Job Satisfaction (1-5)	226	1	5	3.59	1.16	-.58	-.46
Job Satisfaction (1-100)	226	1	100	67.72	26.81	-.98	-.01

Note. N - number of respondents in the sample; M – arithmetic mean; SD - standard deviation; Sk – Skewness; Ku- Kurtosis

This is further confirmed by the distribution of ratings, where most respondents give ratings indicating a moderate to high level of job satisfaction. The value of the normality and distribution indicators does not show deviations, i.e., it indicates a normal distribution.

What is the relationship between the basic psychological needs in the workplace, as defined by self-determination theory, and job satisfaction among employees?

To address the research question regarding the relationship between the BPNs as defined by SDT and JS, both numerical assessments of job satisfaction were observed (a 1 to 5 scale and a 1 to 100 scale). Given that the correlation coefficients are very similar for both scales used to assess job satisfaction, the variable of job satisfaction measured on a scale of 1 to 5 was used for all subsequent statistical analyses.

Table 6.

Correlation between BPNs and Job Satisfaction

	Job Satisfaction (1-5)	Support of autonomy (PA)	Support of competence/ structure (PS)
Job Satisfaction (1-5)			
Support of autonomy (PA)	.71**		
Support of competence/structure (PS)	.66**	.80**	
Support of relatedness (PU)	.66**	.75**	.77**

*Note. ** The correlation is significant at the p < .01.*

The results show a statistically significant strong positive correlation between all three BPNs and JS, indicating that higher support of BPNs values correspond with higher job satisfaction, and vice versa.

Can job satisfaction be predicted based on the basic psychological needs in the workplace, as defined by self-determination theory?

Multiple linear regression analysis was used to determine if JS (measured on a 1 to 5 scale) can be predicted based on BPNs.

Table 7.
Model Evaluation, Model Significance and *Predictor Coefficients in the Model*

Model	Standardized Coefficients β	t	p	Collinearity Partial Correlation	Tolerance	VIF	
Support of autonomy	.41	5.18	.00	.23	0.32	3.15	
Support of competence/ structure	.15	1.84	.07	.08	0.30	3.35	$R = .74$, $R^2 = .55$ $F_{(3, 222)} = 90.74$, $p < .01$
Support of relatedness	.23	3.12	.00	.14	0.36	2.80	

The results indicate that model explains 55% of the variability in job satisfaction, with no autocorrelation of residuals. The presented model is statistically significant, with all BPNs being significant predictors of job satisfaction (though support of competence/structure is borderline statistically significant), and with support for autonomy having the highest positive predictive contribution, followed by relatedness and competence/structure. The collinearity analysis indicates that there is no issue of high collinearity among the predictors, and the variance inflation factors (VIFs) are below the critical value.

What are the socio-demographic correlates of job satisfaction among employees?

To answer the research question about socio-demographic correlates of job satisfaction, correlation analysis and ANOVA were conducted.

Table 8.
Correlation of Job Satisfaction and Sociodemographic Variables

	Job Satisfaction (1-5)
Gender	.05
Age	.15*
Employment Status	-.07
Yers of Service	.16*

Yers of Work Experience	.17[*]
Years of Service with Current Employer	-.03

Note.*The correlation is significant at the $p < .05$ significance level.

Age, years of service, years of worke experience (based on small correlation coefficients) and salary (based on the small differences in means), show statistically significant but relatively weak correlation with job satisfaction (Table 8).

Table 9.
Analysis of Job Satisfaction accross Socio-Demographic Variables

		M	SD	F test	p
Education	Category 1 (primary and secondary)	4.0	1.0	2.05	.13
	Category 2 (higher and university)	3.5	1.2		
	Category 3 (master's, postgraduate and doctoral)	3.6	1.2		
Workplace Model	On-site	3.5	1.2	2.72	.07
	Hybrid	3.8	0.9		
	Remote	3.8	1.2		
Sector	Primary	3.7	1.1	0.40	.68
	Secondary	3.7	1.1		
	Tertiary	3.6	1.2		
Salary	Below average	3.1	1.2	3.80	.02
	Average	3.6	1.1		
	Above average	3.7	1.1		

M – arithmetic mean; SD - standard deviation

According to the Table 9 we can see that there is a a statistically significant difference in job satisfaction based on salary, but the magnitude of effect size is small. Namely, Cohen's $d = 0.1949$ indicates a small to moderate effect size, suggesting that there is some difference between the groups, but it is not particularly large.

Table 10

Analysis of Group Differences

Dependent Variable			Mean Difference	Std. Error	p
	Below average	Average	-0.46	0.24	.05
		Above average	-0.59	0.22	.01
	Average	Below average	0.46	0.24	.05
		Above average	-0.13	0.18	.45
Job Satisfaction	Above average	Below average	0.59	0.22	.01
		Average	0.13	0.18	.45

Post-hoc analysis revealed a statistically significant difference **between the** below average salary group **and** above average salary group **as well as between the** below average salary **and** average **salary** salary **groups. These differences indicate that respondents with** below-average salaries **report** lower job satisfaction **compared to those with** average or above-average salaries**. Based on** the effect size (d = 0.13), we can conclude that the difference between below average and average is not very pronounced. The effect size (d = 0.19) indicated that there is small to moderate difference between below average and above average groups. The effect size (d = 0.05) indicated that there is very small differences between average and above average salery groups. This confirms that the observed differences between groups contribute only minimally to overall job satisfaction variance.

Discussion

The main purpose of this study was to examine the relationship between the basic psychological needs in the workplace, as defined by SDT, and job satisfaction among employed individuals. To achieve this goal, a psychological measuring instrument constructed for the author's master's thesis was applied, so, an important part of this study was the verification of the psychometric characteristics of the applied measuring instrument. Based on high reliability coefficients, it has been confirmed that the applied measurement instrument has satisfactory metric characteristics, almost identical to the metrict characteristics of the same instrument in the previous reserch (Đuranović, 2021).

The results showed a statistically significant, strong positive correlation between satisfaction of all three basic psychological needs in work context and job satisfaction. It was also confirmed that the model including BPNs as predictors statistically significantly predicts job satisfaction, explaining about 55% of the

variance in job satisfaction, with a statistically significant influence of all three BPNs. This confirms that BPNs are not only strongly associated with job satisfaction but also serve as significant predictors of this construct, underscoring their individual and collective importance in understanding and enhancing job satisfaction within organizational contexts. This means that organizations could significantly influence the job satisfaction of their employees through support of autonomy, support of competence/structure, and support of relatedness, indicating the importance of practical integration of strategies that support basic psychological needs in oraganizastional setting. These findings are consisten with findings of multiple other reserch that established connection between basic psychological needs as described by SDT and job satisfaction/workplace well-being (Brunelle & Fortin, 2012; Decker & Van Quaquebeke, 2014; Fernandez & Moldogaziev, 2013; Takahashi, Ohkawa & Inamizu, 2014; Author, 2021). While this study adds to the body of knowledge by quantifying the contribution of BPNs in predicting job satisfaction, supporting robust evidence for the importance of autonomy, competence, and relatedness in the workplace, the novelty of this research lies in its specific focus on non-Western culture and originality of the used measurement instrument. Namely, much of the existing research and literature has primarily examined these constructs in Western organizational contexts, and this study expands the scope by investigating Serbian speking population (since the survey was distributed online, there is no direct evidence to confirm that all participants were employed in a specific country or region, only that they were part of a Serbian-speaking demographic). This contribution is particularly valuable as it demonstrates the applicability of SDT principles in diverse cultural and linguistic contexts, reinforcing the theory's universality. Moreover, the study highlights the use of an original psychological measurement instrument developed in the local language, offering unique insights into understanding this theory within a Serbian-speaking working population. Additionally, the analysis of the instrument's items provides actionable guidance for organizations aiming to design workplace interventions that effectively address employees' core psychological needs.

The study also revealed that job satisfaction is in is either not determined by the tested socio-demographic characteristics of employees, or there are weak positive correlation with age, years of service, years of worke experience. Also, the results indicate that there are differences in job satisfaction between the groups with different average salaries. Such results are an expected outcome, considering that the research is based on SDT, according to which job satisfaction is determined by the satisfaction of basic psychological needs, which are in this theory understood as universal human needs, so the socio-demographic characteristics of people should not have significant influence in this respect (Deci & Ryan, 2000; Ryan & Deci, 2017). These results are mostly in line with findings of various similar studies (Batz-Barbarich et al., 2018; Clark, 1997; Đuranović, 2021; Faragher et al., 2005; Gajendran & Harrison, 2007; Judge et al., 2010; Koustelios, 2001; Ng & Feldman, 2010; Solomon et al., 2022).

Ng and Feldman (2010) based on the results of meta-analysis concluded that chronological age is generally associated with more favorable job attitudes, though

the strength of this relationship is weak to moderate, just like seen in this study. Years of service and experience, which in this study also show a statistically significant weak correlation with job satisfaction, may be influenced by chronological age, and, therefore, further investigation is required to better understand this relationship. At the same time, tenure demonstrated no statistically significant correlation with job satisfaction in this study, aligning with the findings of a previous study by Đuranović (2021).

On a sample of teachers in Greece, Koustelios (2001) found that employment status (permanently or temporarily), is not a significant predictor of job satisfaction. This finding was confirmed in the present study, which examined employees across various sectors, as well as in a another study conducted by the same author (Đuranović, 2021). The finding of this study that education does not have a statistically significant effect on job satisfaction, is partially in line with the meta-analysis by Solomon et al. (2022), which found a weak negative effect, suggesting that, while education may play a minor role, its impact on job satisfaction is not substantial. This study's finding fully aligns with studies of Đuranović (2021) and Clark (1997), both of which concluded that education alone does not determine job satisfaction.

The meta-analysis by Gajendran and Harrison (2007) demonstrates that telecommuting has a moderate positive effect on job satisfaction, while findings of this study showed no significant effect of workplace model on job satisfaction. The potential explanation for the discrepancy is that 2007 meta-analysis examined studies from a different economic and technological landscape, where telecommuting was less common and perceived as a privilege. In contrast, the current study, conducted in a post-pandemic environment where remote and hybrid work have become the norm, suggests that employees may no longer see these models as an advantage, potentially reducing their impact on job satisfaction. This means that the impact of workplace models on job satisfaction may depend on external conditions, employee expectations, and even industry-specific factors, which have evolved significantly since earlier research, hence future studies would need to explore these moderating variables.

While the meta-analysis conducted by Faragher et al. (2005) does not directly quantify the correlation between job satisfaction and sector, it suggests that job satisfaction is higher in sectors with better work environments (e.g., tertiary sector) and lower in sectors with more challenging conditions (e.g., primary sector), that is is not supported by findings of this study that found no statistically significant differences between sectors and job satisfaction. Several factors may explain this discrepancy in findings. First, the sample used in this study is smaller than those in the referenced meta-analyses, making it more challenging to detect significant differences in job satisfaction across sectors compared to large-scale meta-analytic studies. Additionally, given that data collection in this study was conducted primarily online, it is reasonable to assume that the sample exhibits lower variability than those used in meta-analyses. This is because not all jobs within a sector offer the same working conditions, and the predominantly 'administrative' nature of the roles of likely participants in this study may have contributed to the absence of observable

differences, if any. However, as meta-analyses do not provide direct insight into this specific relationship, further research is necessary to determine the true impact of sector affiliation on job satisfaction.

The results indicated that there are differences between groups with below average salary and with above average salary, as well as between the groups with below average salary and with average salary. Differences showed that respondents with below-average salaries report lower job satisfaction compared to those with average or above-average salaries. A meta-analysis by Judge et al. (2010) revealed that pay level has only a marginal correlation with job satisfaction.

Finally, the findings of this study regarding the relationship between gender and job satisfaction are in line with the results of the meta-analysis conducted by Batz-Barbarich et al. (2018), which found no significant gender differences in job satisfaction, suggesting that gender alone is not a strong determinant of job satisfaction.

Considering the results, employers, especially people who work in human resources, should actively work on establishing organizational culture that supports the satisfaction of employees' basic psychological needs and this should primarily be implemented through adequate educational programs, as supported by reserch releted to this topic (Fernandez & Moldogaziev, 2014). Namely, numerous studies have confirmed a positive connection between job satisfaction and both employee performance and organizational performance (Bakotić, 2016; Oswald, Proto & Sgroi, 2015; Pushpakumari, 2008). Companies should not only support BPNs for the well-being of their employees but also recognize that doing so is in their own best interest.

Besides providing opportunities for the described practical application, the presented results primarily encourage further research to examine the correlation between BPNs and job satisfaction, as well as further validation and refinement of the applied measurement instrument. Some of the recommendations for the continuation of research efforts based on these findings, and the applied measurement instrument, would be: potential improvement of the operationalization of the construct of job satisfaction (which in this research was treated as a unidimensional phenomenon); identification of other factors that significantly participate in the explanation of the total variance of job satisfaction; conducting a longitudinal study that would track the effects of improving support of BPNs on job satisfaction, and potentially employee productivity; multiple repeated verification of the metric characteristics of the measurement instrument on, first of all qualitativel, but also quantitatively, improved sample(s), reevaluation and possible adaptation of the instrument to the needs of different professions, etc.

Employees who are satisfied with their jobs tend to be more engaged and motivated, which directly impacts productivity and the profitability of the company (contributing to the growth of the economy as a whole) (Bakotić, 2016; Oswald et al., 2015; Pushpakumari, 2008). At the same time, programs developed based on these findings can significantly improve job satisfaction. Therefore, the findings of this and similar studies, which help identifying factors that explain the complex phenomenon of job satisfaction, are of exceptional importance, not only for science

and business practices, but should also be of state and public interest.

This study is not without its limitations. First, the sample doesn't adequately represent the parameters of the entire population, which could affect the generalizability of the findings. Additionally, some categories of socio-demographic variables were not sufficiently represented to facilitate meaningful statistical analysis, necessitating the transformation of certain variables, therefore potentially compromising the validity of the findings and leading to incomplete or misleading interpretations. Furthermore, the questionnaire utilized in this study differs from those employed in any previous research and has been developed relatively recently; thus, further validation and refinement of the measurement instrument are warranted.

Conclusion

All three BPNs as defined by the SDT are in a positive, statistically significant and intense correlation with job satisfaction. Support of autonomy, support of competence/structure and support of relatedness explain a significant portion of job satisfaction (55%). Job satisfaction can be predicted based on support of autonomy, support of competence/structure and support of relatedness. The greatest contribution to job satisfaction has support of autonomy, followed by support of relatedness, with support of competence/structure having the least contribution to employee satisfaction. Job satisfaction is either not determined by the tested socio-demographic characteristics of the respondents, or there are only relatively weak positive correlations between socio-demographic variables with job satisfaction. The applied measurement instrument has satisfactory metric characteristics.

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APPENDIX

Appendix 1.

Part of the Questionnaire Representing the Instrument Related to the BPNs as defined by Self-Determination Theory, i.e., the Part of the Questionnaire That, Using Three Subscales, Operationalizes Support of Autonomy (PA), Support of Competence/Structure (PS) and Support of Relatedness (PU)

Support of Autonomy - PA
1. The tasks I perform at my workplace are mostly those that interest me.
2. The tasks I perform at my workplace are often those I have chosen myself.
3. I usually choose the way I will carry out the tasks assigned to me.
4. If the nature of the tasks allows, when tasks are delegated by my immediate supervisor, I have the opportunity to choose the tasks I want to work on.
5. If an employee is interested, the company I work for supports horizontal/functional mobility (i.e., changing positions within the company, regardless of previous experience and/or education).
6. If an employee is interested, the company I work for supports and encourages vertical mobility (i.e., advancing up the hierarchical ladder).
7. My supervisor strives to give me freedom of choice regarding which parts of the task I want to work on whenever the nature of the tasks allows.
8. I am independent of other colleagues in performing tasks.
9. I am independent of my supervisor in performing tasks.
10. At all times, I can independently access all the resources necessary for work.
11. I independently decide how many working hours I will work in one day as long as I fulfill the contracted hours during the week.
12. I can take unpaid leave whenever I need it, without any consequences or problems.
13. I have complete freedom to take my lunch break whenever it suits me during the day.

14. Whenever I need it, I can take my annual leave without any consequences or problems.
15. Within the contractually stipulated total number of annual leave days, I independently decide how many days of annual leave I will take.
16. I independently set deadlines for completion of assigned tasks.
17. When deadlines are set for the tasks assigned to me, my opinion and assessment of how much time is needed to complete them are the most important.
18. The deadlines for completing tasks in the company I work for are generally realistic.
19. I am allowed to extend the deadlines for completing tasks without any consequences.
20. Making mistakes that are not reckless is expected and acceptable in the organisation I work for.
21. At work, it is allowed and expected to express both dissatisfaction and satisfaction with assigned tasks.
22. At work, it is allowed and expected to express both dissatisfaction and satisfaction with decisions made by the immediate supervisor.
23. I freely express my views and emotions in front of everyone in the organisation regarding all work and work environment-related matters.
24. A well-done job involves a raise or a bonus in the form of material compensation.
25. My supervisor often surprises me with open verbal praise for a well-done task.
26. My supervisor does not use controlling language.
27. My supervisor strives to look at every problem I face at work from my perspective and makes decisions or finds solutions accordingly.
28. My supervisor addresses me with respect.
29. My supervisor has a democratic leadership style.
30. My supervisor issues work orders in a manner and through a communication style that is appropriate.
31. My supervisor communicates with everyone in the organisation in an appropriate manner, i.e., in a manner suitable for the situation.
32. In the organisation I work for, critical thinking is expected and encouraged.
33. If I point out an oversight, omission, or mistake by anyone in the department, including my supervisor, it is welcomed and accepted with approval.
34. If I suggest a different and/or better way of solving a problem or approaching a task, it is always welcomed and accepted with approval by my supervisor.
35. There are consequences for not completing tasks within the prescribed deadline.
36. Except for the training/education that the employer and/or law prescribes as mandatory for all or some employees, I choose which training/education to attend based on my own interests.
37. I attend training and education in the area(s) that interest me the most.
38. I choose the area(s) in which I will be professionally developing.
39. I determine my own work rhythm.

40. I am rarely interrupted at work by my supervisor.
41. Showing interest in development in areas significant for the work I do is encouraged.
42. As much as the nature of the job allows, I organize my work independently.
43. I am satisfied with the flexibility of my working hours.
44. When the nature of the task allows, I can choose where I will work/perform my tasks from.
45. As much as the nature of the job allows, I independently determine my career goals.

Support of Competence/Structure - PS
1. My supervisor trusts that I will complete the work in the best possible way.
2. If I encounter something I don't know how to do, I always know who to ask for clarification and/or help.
3. At work, I always know exactly what is expected of me.
4. My supervisor always explains the ultimate goal of each task assigned to me.
5. I always understand why I need to do what is assigned to me.
6. Roles, and with them related tasks and expectations from everyone in the organisation I work in, are very clearly defined.
7. The goals set for me at work are always very clear and precise.
8. If I lack some information to successfully complete a task, it is always clear where I can find/get it.
9. My supervisor always verbally expresses satisfaction if (s)he is happy the work I have done.
10. I have been unexpectedly praised by my supervisor several times.
11. I am satisfied with the quality of my work.
12. I consider myself a valuable member of my team and belive I significantly contribute to the quality execution of tasks.
13. I think that most people in the organisation consider me a valuable team member who significantly contributes to the quality execution of tasks.
14. If I receive negative feedback about my work, it is always given constructively.
15. I receive quality training.
16. For every process in the organisation I work in, there is a clear and precise written procedure that is always available to everyone.
17. For every mandatory procedure/rule, the reasonable reasons for necessity of its observance are clearly explained.
18. Upon employment, I received quality onboarding training.
19. I get the opportunity for continuous development in the area(s) of work that interest me.
20. The equipment I work with is very functional and significantly facilitates my work.

21. The company I work for invests a lot in the professional development and growth of all employees who are interested in it.
22. It is clear what work results bring bonuses in the form of material compensation.
23. I believe that most of my colleagues, if they opened their own company, would gladly hire me because of my expertise.
24. In the collective I work in, there are clear criteria and boundaries of behavior that apply to all employees.
25. I receive precise instructions on how the tasks I am expected to perform should be carried out, which I must not deviate from.
26. I think that the work in the team I work in is well organized.
27. If someone took over the tasks of anyone from my team, they could very quickly continue where the person whose tasks they took over left off.
28. If I get interested in a certain aspect of work from which I receive tasks more than in others, I will be given the opportunity to develop in that area through training and education.
29. I always have/get clear explanations, instructions, and procedures regarding the tasks assigned to me.
30. I always receive relevant and constructive feedback regarding the tasks I have performed.
31. If I need it, I can always count on the help of my supervisor regarding the tasks assigned to me.
32. The general working conditions in the organisation I work in enable me, if I want to, to achieve the best possible results in the area I work in.
33. The general working conditions in the organisation I work in do not hinder or limit the development of my professional knowledge.
34. My work results depend solely on me.
35. My supervisor controls my work, not me.
36. The tasks assigned to me are always realistic and achievable.
37. The results of the work in the organisation where I work are evaluated on the basis of objective and measurable criteria that are the same for everyone
38. In the organisation where I work, it is known exactly what someone needs to do/achieve in order to advance on the hierarchical ladder
39. For each binding procedure/rule, the consequences of not applying it are clearly explained

Support of Relatedness - PU
1. I have good relationship with most colleagues in the team
2. I fully belong to the team in which I work
3. I never feel excluded from the team in which I work
4. I consider many of my colleagues as friends
5. If I face a problem, regardless of whether it is directly related to work or not, I can always count on the help of most of my colleagues

6. Interpersonal relationships in the collective where I work are good
7. From the first working day, I was well received by my supervisor
8. From the first working day, I was well received by my colleagues
9. My colleagues love and respect me
10. My colleagues are happy to cooperate with me
11. I am happy to cooperate with most of my colleagues
12. I socialize with my colleagues outside of work too
13. I feel that I am an important part of the team in which I work
14. I think my colleagues really appreciate my opinion regarding the execution of tasks and work in general
15. My ideas regarding the execution of tasks are often accepted by the team
16. The team in which I work is fulfilling to me
17. I love my colleagues
18. I respect my colleagues
19. In the team where I work, there is mutual respect for all members
20. There is no discrimination in terms of work tasks entrusted to team members for execution, i.e. everyone equally gets both easy and difficult, boring and interesting tasks
21. Everyone in the team has equal access to the resources needed to execute assigned tasks
22. I think that some colleagues believe that there are privileged favorites in the team, but that is not true
23. My colleagues often surprise me with open verbal praise for a job well done
24. I believe that all employees in the team where I work are treated equally
25. In the organisation where I work, communication with everyone, regardless of their position in the business hierarchy, is relaxed and natural
26. I think my supervisor understands me as a person
27. I think my supervisor respects my needs even when they are not directly related to work
28. I think it is important to my supervisor that I feel good
29. If necessary, my supervisor will always provide me with help and support to make me feel better
30. I think that in the organisation where I work there is genuin care about the employees
31. My relationship with my supervisor is based on trust
32. My relationship with colleagues is based on trust
33. My relationship with my supervisor is based on mutual respect
34. I feel good at work
35. Communication in the organisaton where I work is pleasant
36. I think my supervisor knows me well
37. I think my supervisor makes an effort to get to know each employee well
38. The team accepts me as I am
39. I have a warm relationship with everyone in the team
40. I have a warm/friendly relationship with my supervisor

41. I think that my supervisor is interested in each employee as a person
42. I feel that our supervisor is a strong support for everyone in the team
43. My supervisor will set aside time for each employee
44. In the team, whenever necessary, we devote time to each other
45. In the team where I work, there are healthy emotions among colleagues
46. I am involved in making decisions concerning work in the team where I work

Faktori teorije self-determinacije i zadovoljstvo poslom

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Apstrakt

Sprovedeno istraživanje imalo je za cilj da utvrdi odnos osnovnih psiholoških potreba (OPP) prema teoriji self-determinacije i zadovoljstva poslom, da li se na osnovu OPP može predvideti zadovoljstvo poslom, te proveri sociodemografske korelate zadovoljstva poslom kod zaposlenih. Za ostvarivanje ovog cilja primenjen je psihološki merni instrument konstruisan za potrebe master rada autora ovog istraživanja. Istraživanje je sprovedeno na uzorku od 226 ispitanika. Dobijeni rezultati su potrvdili da su sve tri OPP (podrška autonomiji, podrška strukturi i podrška uključenosti) u pozitivnoj, statistički značajnoj i intenzivnoj korelaciji sa zadovoljstvom poslom, da se na osnovu OPP može predvideti zadovoljstvo poslom, i da zadovoljstvo poslom ili nije determinisamo testiranim socio-demografskim karakteristikama zaposlenih (pol, obrazovanje, radni status, godine zaposlenja kod trenutnog poslodavca i sektor/industrija), ili da postoje slabe pozitivne korelacije (starost, radni staž, radno iskustvo, mesto izvršenja radnih obaveza i plata). Istraživanjem je potvrđeno i da su metrijske karakteristike primenjenog mernog instrumenta zadovoljavajuće.

Ključne reči: teorija self-determinacije/teorija samoodređenja, zadovoljstvo poslom, podrška autonomiji, podrška strukturi, podrška uključenosti

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- **The paper title**, that should be at the top of the first page of text (all significant words are capitalized), and section titles (**Method, Results**, etc.) are written in **bold**, centered, size 12.
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- **The names of the instrument are written in bold letters** with a dot at the end, and other necessary data for the instrument are given below. Provide the full name of the instrument, abbreviation, and reference. Example**: Inventory for the assessment of positive and negative affect (PANAS-X; Watson et al., 1988; for Serbian adaptation see Mihić et al., 2014).**

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- Tables, images, and graphs should be provided in Word format.
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Example of the table formatting:

Table 1
Correlation Between Subjective Well-being and Loneliness

	Social loneliness	Loneliness in love	Loneliness in family
Satisfaction with life	-.51**	-.34**	-.34**
Positive affect	-.21**	-.04	-.11
Negative affect	.16	.07	.19**

Note. ** $p < .01$.

Images and graphs should also be organized according to APA standards. Each image or graphic should be labeled with the number, bold (e.g. **Graph 5.**) and the appropriate name, with the name being *Italic* style, and all significant words are capitalized (e.g., *Distribution of results in the experimental group*). The number of the image/graph and its name should be above the image/graph having a left adjustment, and the title is single line below the number of the image/graph. The abbreviations listed in the tables and figures should be explained below the table or figure. Each category (image, graph, table) should be numbered sequentially. If the image has been taken from somewhere else, it is obligatory to cite the source.

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- All the references included in the text must also be included in the list of references (and vice versa).
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Development WA. (n.d.). *Elizabeth Quay*. https://www.mra.wa.gov.au/projects-and-places/elizabeth-quay

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  Gao, W. (2018). *Fuel properties and thermal processing of bio-oil and its derived full mixtures* [Doctoral dissertation, Curtin University]. espace. https://espace.curtin.edu.au/handle/20.500.11937/75545

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- The appendix should include only those descriptions of material which would be of use to the readers for understanding, evaluating, or reproducing the research.

Footnotes and abbreviations.
- Footnotes should be avoided, except when necessary (for example, citing that the work originated as part of a project, etc.). Abbreviations should also be avoided, except for frequently usual ones. Abbreviations which are included in tables and images should be explained.

In addition to these instructions, the authors can also use the TEMPLATE for preparing their submissions.