

PRIMENJENA  
PSIHOLOGIJA



No4, 2024

# Contents

Stress and coping strategies among Balkan mothers of children with developmental disorders

435 Maša Marisavljević, Nikola Petrović, Olja Jovanović, Milica Ćirović, Nina Stanojević, and Nevena Folić

Gender differences in left-right ideology: European men are more right-wing, women are more centrist?

473 Aleksandra Trogrlić, Bojan Todosijević

Perception of intergroup threat of Croatian receiving community in the context of integration of refugees

505 Jana Kiralj Lacković, Dean Ajduković

Psychological traits of League of Legends players who prefer different positions and roles in the game

551 Nemanja Šajinović, Bojana Bodroža

Interpersonalne kognitivne distorzije kao medijator učinka socijalne anksioznosti i depresivnosti na usamljenost studenata








577 Ana Petak

603 Acknowledgment of Reviewers



Research Article

# Stress and coping strategies among Balkan mothers of children with developmental disorders

Maša Marisavljević<sup>1,2</sup>  , Nikola Petrović<sup>2</sup> , Olja Jovanović<sup>3</sup> ,  
Milica Ćirović<sup>1,2</sup> , Nina Stanojević<sup>1,2</sup> , and Nevena Folić<sup>4,5</sup> 

<sup>1</sup>*Cognitive Neuroscience Department, Research and Development Institute "Life Activities Advancement Center", Belgrade, Serbia*

<sup>2</sup>*Department of Speech, Language and Hearing Sciences, Institute for Experimental Phonetics and Speech Pathology, Belgrade, Serbia*

<sup>3</sup>*Department of Psychology, Faculty of Philosophy, University of Belgrade, Belgrade, Serbia*

<sup>4</sup>*Pediatric Clinic, University Clinical Centre Kragujevac, Kragujevac, Serbia*

<sup>5</sup>*Department of Pediatrics, Faculty of Medical Sciences, University of Kragujevac, Kragujevac, Serbia*

## ABSTRACT

This study explored stress in Balkan parents of children with developmental disorders (DD), taking into account the type of child's DD, sociodemographic factors, and coping strategies. Sample comprised 139 mothers from Serbia (42%), Montenegro (27%), Bosnia and Herzegovina (14%), Croatia (16%), and Slovenia (2%), whose children were diagnosed with specific developmental disorders of speech and language (37%), autism spectrum disorders (39%) and mixed specific developmental disorders (24%). Mothers completed the Parenting Stress Index-SF and Brief COPE, and provided information on sociodemographic characteristics. The one-way ANOVA revealed that mothers of children with ASD reported the highest stress intensity. Linear regression suggests that having a child with autism spectrum disorder, lower education, and the use of Self-blame contribute to the prediction of stress. The results of several mediation analyses indicate that Religion and Behavioral disengagement mediate the relationship between parental stress and

---

the child's age: parents of older children with DD show a greater tendency to use these coping strategies, which consequently leads to higher stress levels.

*Keywords:* parenting stress, developmental disorders, coping strategies, autism spectrum disorder, specific developmental disorders of speech and language

---

UDK: 159.944-

055.26(497):159.922.76

DOI: 10.19090/pp.v17i4.2526

Received: 21.01.2024.

Revised: 25.06.2024.

Accepted: 22.07.2024.



Copyright © 2024 The Author(s).

This is an open access article distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

---

✉ Corresponding author email: [m.marisavljevic@add-for-life.com](mailto:m.marisavljevic@add-for-life.com)

## Introduction

The scientific community increasingly recognizes the importance of observing developmental disorders through a system, family perspective. Receiving a diagnosis of a developmental disorder in a child represents an extraordinary crisis to which family members need to adapt. Due to their nature, crises of this type tend to evolve into chronic stress that family members must learn to live with (Kosić et al., 2021; Weiss & Lunskey, 2011; Weiss et al., 2014).

Children with developmental disorders (hereafter referred to as DD) and their parents undergo numerous evaluations and medical examinations before receiving a diagnosis (Pistoljevic et al., 2021), which contributes to prolonged exposure to increased stress intensity (Negri & Castorina, 2014). Furthermore, learning about a child's diagnosis often elicits mixed emotions, a heightened sense of burden, and a feeling of unresolved grief (Negri & Castorina, 2014; Stoll-Egger, 2019; Stuart & McGrew, 2009). While all parents experience stress when caring for a child, it can be particularly pronounced in parents of children with DD. Numerous studies have shown that stress is the most common consequence of raising a child with a DD (Bhushan Gupta, 2007; Lopez et al., 2008). The typical parenting styles, skills, and approaches recommended for children with typical development often prove ineffective, making raising a child with a DD a significant challenge for parents (Preece & Almond, 2008). Additionally, many studies indicate that the quality of the partner relationship (Gau et al., 2012; Harper et al., 2013; May et al., 2015; Sim et al., 2017), as well as general family functioning (Gau et al., 2012), may be impaired.

Parenting stress, as delineated by Abidin and colleagues (2022), encompasses stressors inherent in fulfilling the parental role, intertwining psychological phenomena with physiological responses. It emerges from a blend of internal and external factors, shaping interactions within the parental role and with children. This unique stress type arises when perceived parenting demands exceed available resources, comprising both child-related and parent-related domains (Abidin, 1995). Notably, parental stress strongly correlates with parenting practices, distinguishing it from other forms of stress (Abidin, 1992).

---

Some studies indicate that both mothers and fathers report elevated levels of parental stress associated with caring for a child with DD (Shtayermman, 2013), while others suggest that fathers report less stress than mothers (Herring et al., 2006; Tehee et al., 2008). Parental stress tends to be higher among older parents (Duarte et al., 2005; Östberg & Hagekull, 2000), those with lower levels of education (Smith et al., 2001), unemployed individuals (Sinha et al., 2016), and divorced or widowed parents (Norizan & Shamsuddin, 2010), as well as those with a larger number of children (Duarte et al., 2005; Östberg & Hagekull, 2000).

Despite growing international interest in DD, there remains a dearth of information regarding the situation of children with DD in developing countries. Specifically, in most Balkan countries, services for child and adolescent psychiatry are underdeveloped and lack integration with other services for children and youth, leading to insufficient intersectoral cooperation (Službeni glasnik, 2019). For instance, in Serbia and Bosnia and Herzegovina, there is no official register of persons with disabilities due to a lack of systematic collection of statistical data (UNICEF, 2017).

In Montenegro, the recent establishment of the Center for Autism suggests that concrete outcomes from its operations are anticipated in the near future (Ministry of Health - Government of Montenegro, 2018). Meanwhile, data from Croatia reveal that the predominant reasons for child hospitalization include specific mixed developmental disorders, specific developmental disorders of speech and language, and pervasive developmental disorders (Croatian Institute of Public Health, 2022). The results of a study conducted in the Balkan countries, specifically in Serbia, Montenegro, and Bosnia and Herzegovina, further support the concerns mentioned above – the study reports high percentages of children who screened positive for cognitive, language, sensory, and motor disabilities (Bornstein & Hendricks, 2013).

Global studies indicate that the intensity of parental stress can vary depending on the child's diagnosis (type of DD). Research suggests that parents of children with autism spectrum disorder (ASD) face the highest risk of experiencing elevated stress levels (Brobst et al., 2008; Giovagnoli et al., 2015;

Harper et al., 2013; Pastor-Cerezuela et al., 2016; Rao & Beidel, 2009; Smith et al., 2010). Similar results were found in research conducted in Serbia and Croatia – parents of children with DD reported medium to high-stress levels (Matišić, 2021; Milačić Vidojević, 2008). Also, parents of children with ASD reported higher levels of stress compared to parents of typically developing children (Bunijevac & Čanadanović-Marinković, 2023; Čarakovac & Milačić Vidojević, 2019a).

In addition to ASD (a group of disorders characterized by qualitative abnormalities in reciprocal social interactions, patterns of communication, and a restricted, stereotyped, repetitive repertoire of interests and activities) (ICD-10, 2011), the other two most frequent disorders of psychological development in our region (Croatian Institute of Public Health, 2022) are Specific developmental disorders of speech and language (disorders in which normal patterns of language acquisition are disturbed from the early stages of development; these conditions are not directly attributable to neurological or speech mechanism abnormalities, sensory impairments, intellectual impairments, or environmental factors) (ICD-10, 2011) and Mixed specific developmental disorders (a residual category for disorders in which there is some admixture of specific developmental disorders of speech and language, scholastic skills, and motor function, but in which none predominates sufficiently to constitute the prime diagnosis; these disorders are usually, but not always, associated with some degree of general impairment of cognitive functions) (ICD-10, 2011).

However, while research on parental stress in parents of children with ASD has indicated the particularly stressful nature of raising these children, studies comparing the stress experienced by parents of children with other DDs are lacking in the Balkans.

When considering other child factors, research has shown that the intensity of parental stress is related to the child's age (Barker et al., 2011; Milačić Vidojević, 2008; Tehee et al., 2009), but not to the gender (Herring et al., 2006) of a child with DD.

Previous research indicates that the strongest predictors of parental stress are individuals' coping responses, defined as attempts to prevent or

---

reduce threat, harm, or loss, and to alleviate distress (Cramer, 2003). While some authors argue that so-called emotion-focused strategies, aimed at minimizing stress-induced distress (such as self-pacing, expressing negative emotions, focusing on negative thoughts, attempting to avoid stressful situations, acceptance, humor, and positive redefining), are maladaptive (Piazza et al., 2014; Sivberg, 2002; Vernhet et al., 2019; Wang et al., 2011), others contend that maladaptive strategies are actually those that are problem-focused, such as planning, active coping, and seeking instrumental support (Cooper et al., 2008). On the other hand, researchers generally concur that avoidance strategies (aimed at evading threats or related emotions, including avoidance, substance use, denial, self-blame, and emotional venting) contribute to increased stress levels, while task-oriented strategies (such as planning, acceptance, and positive reframing) are associated with resilience (Hastings et al., 2005; Whitehead et al., 2015). However, data on the relationship between so-called engagement strategies (which involve dealing with stressors or emotions and include seeking support, emotional regulation, acceptance, and cognitive restructuring) and stress intensity remain limited (Skinner et al., 2003).

Unfortunately, there is limited research on coping strategies in the Balkan countries. For example, a study from Bosnia and Herzegovina showed that parents of children with ASD use problem-focused coping strategies (Gosto, 2016). Additionally, a study conducted in Serbia and Bosnia and Herzegovina indicates that in stressful situations, parents mostly use the strategy of redefining the problem, differing from parents of children with typical development only in their more frequent use of seeking help from experts (Čarakovac & Milačić Vidojević, 2019b). Another study from North Macedonia showed that increased usage of distraction and disengagement heightened the level of parental stress, while family support acted as a buffer for managing stress in parents of children with ASD (Nolcheva & Trajkovski, 2015).

Despite the extensive literature on stress and coping strategies in other countries, no such trend has been observed in the Balkans. The Balkan countries share a culture distinct from both Western and Eastern countries. Specifically,



since the 1990s, the Western Balkan region has been marked by severe conflicts, including the war and disintegration of Yugoslavia and NATO bombing, leading to economic collapse. Additionally, the global financial crisis further slowed economic growth and exacerbated high unemployment (Dabrowski & Myachenkova, 2018). While some Western Balkan countries, like Slovenia and Croatia, are already EU members, most of them are in the early stages of the accession process, necessitating accelerated reforms and resolution of key issues in family laws and education. However, patriarchal gender norms still dominate the region, making it challenging for both men and women to depart from traditional gender roles (Pešić, 2009). Consequently, women often bear the primary responsibility for childcare.

The crises experienced in the Balkans have had significant consequences that affect children with DDs and their families. While the system of early intervention has been established in much of the world since the last century, the Balkans still face systemic deficiencies and lack general system support (Nedović et al., 2016).

For example, in Slovenia and Croatia, there have been strides in developing comprehensive healthcare systems and increasing access to early intervention services for children with DDs. However, despite this, a recent study in Croatia showed that knowledge of DDs was inconsistent and inaccurate understandings were common. Additionally, the researchers found that attitudes regarding the inclusion of learners with DDs were ambivalent, and that training in ‘good practice’ approaches was extremely limited (Stošić et al., 2022). Countries like Serbia, Montenegro, North Macedonia, and Bosnia and Herzegovina face challenges related to limited resources, fragmented healthcare systems, and insufficient funding for services and support programs. For example in Bosnia and Herzegovina, despite parents typically reporting developmental problems in their children around the age of 17 months, diagnoses of DDs are often delayed by an average of one and a half years, prolonging stressful circumstances for these families (Pistoljevic et al., 2021). In some cases, DDs go unnoticed or are misinterpreted by parents, preschool teachers, or professional associates (Ilić et al., 2020; Pistoljevic et al., 2021).

Furthermore, a chronic lack of standardized tests and adequate assessment instruments further complicates the diagnostic process, resulting in late identification of children with DDs (Ilić et al., 2020) and unsystematic, inappropriate intervention programs (Ibrahimagic et al., 2015). Parents of children with DDs from Serbia and Bosnia and Herzegovina express frustration with accessing professional services (Pejovic-Milovancevic et al., 2018) and receive minimal government assistance (Čolić, 2023), often relying on centralized, limited non-governmental organizations for support (Gosto, 2016). However, there are insufficient adequate and diverse community-based services for those families (Džamonja Ignjatović et al., 2017), and the parents of children with DDs bear the burden of care on their own, which creates immense pressure on these families (May & Hansen, 2016). Because of the difficulties with the availability of services and getting appointments, as well as the problems with accessing public healthcare services, parents from Serbia, Croatia, and North Macedonia report that they have to pay for private services (Međaković et al., 2024), even though they are also facing social isolation, economic crisis, and poverty (Džamonja Ignjatović et al., 2017).

The opportunities regarding policies, resources, and treatment possibilities for children with DDs vary across Balkan countries, and disparities exist due to differences in healthcare systems, funding, and infrastructure. However, while efforts have been made to improve services and support for children with DDs in these countries, there are still challenges. It seems that, despite country differences, disparities in access and service utilization speak to common regional needs.

In order to obtain significant data to improve practices in Balkan mental health clinics, deepen knowledge on this topic, and address gaps and contradictions in existing literature, we have set the following aims for this study: 1) compare the intensity of stress among Balkan parents in relation to the type of developmental disorder in their children; 2) explore the sociodemographic factors and coping strategies that contribute to parental stress among Balkan parents; 3) examine whether the relationship between

sociodemographic variables and parental stress is mediated by specific coping strategies.

Based on previous findings (Brobst et al., 2008; Harper et al., 2013; Rao & Beidel, 2009; Smith et al., 2010), we hypothesized that parents of children with ASD will report the highest stress intensity (H1). We predict that certain sociodemographic factors will contribute to parental stress, consistent with previous research. Specifically, we expect parental stress to be higher in older (Duarte et al., 2005; Östberg & Hagekull, 2000), less educated (Smith et al., 2001), and unemployed parents (Sinha et al., 2016), as well as those with a larger number of children (Duarte et al., 2005; Östberg & Hagekull, 2000) (H2a). Additionally, based on previous research (Hastings et al., 2005), we anticipate that avoidance strategies (such as substance use, denial, self-blame, and emotional venting) will predict increased stress levels (H2b). Furthermore, research indicates that parental stress is higher in those with a larger number of children (Duarte et al., 2005; Östberg & Hagekull, 2000), while research on the impact of a child's age on parental stress yields inconsistent results. While some authors suggest higher stress in parents of younger children (e.g., Barker et al., 2011), others report increasing stress with age (e.g., Milačić Vidojević, 2008; Tehee et al., 2009). Moreover, one study (Peters-Scheffer et al., 2012) found no relationship between children's age and maternal stress. Considering that certain coping strategies mediate the relationship between parental stress and factors like parental quality of life (Ni'matuzahroh et al., 2022), child's symptoms severity (Miranda et al., 2019), and child externalizing behavior (Chen et al., 2024), we hypothesize that some coping strategies may act as mediators between parental stress and sociodemographic variables (such as child's age and number of children), potentially explaining the inconsistencies in previous research findings (H3).

---

## Method

### Participants and procedure

Taking into account that the predominant reasons for child hospitalization in the Balkans include Specific Developmental Disorders of Speech and Language (SDDSL), Autism Spectrum Disorder (ASD), and Mixed Specific Developmental Disorders (MSDD) (cf. Bornstein & Hendricks, 2013; Croatian Institute of Public Health, 2022), and that these DDs are highly correlated with parental stress (cf. Bunijevac & Čanadanović-Marinković, 2023; Čarakovac & Milačić Vidojević, 2019a; Matišić, 2021), we wanted to focus the study specifically on parents who have children diagnosed with these three conditions.

Therefore, this research was conducted as a cross-sectional study using a convenience sample. The participants in this study were 139 mothers of children with DDs. The maternal age ranged from 24 to 54 years ( $M = 36.44$ ,  $SD = 5.40$ ). Less than 1% of mothers had completed elementary school, while 36% had a high school education. The majority of mothers held a university diploma (42%), and 20% had postgraduate education. Almost one-third of mothers in the study were unemployed (29.5%), while the rest of them were employed (70.5%). The majority of mothers in the study were married or cohabitating (93%), while 7% were divorced. More than half of the mothers (52.5%) had two children, while 29.5% had only one child, and 18% of mothers had three or more children. The mothers were from Serbia (42%), Montenegro (27%), Bosnia and Herzegovina (14%), Croatia (16%), and Slovenia (2%).

Their children were diagnosed with Specific Developmental Disorders of Speech and Language (SDDSL) (37%), Autism Spectrum Disorder (ASD) (39%), and Mixed Specific Developmental Disorders (MSDD) (24%) by a qualified child psychiatrist, within a clinical assessment, prior to this research.

The children's ages ranged from 2 to 12 years ( $M = 5.34$ ,  $SD = 2.09$ ). The majority of the children were male (77%).

Mothers were recruited within the Institute for Experimental Phonetics and Speech Pathology (IEPSP) "Đorđe Kostić" in Belgrade, Serbia, where their children received speech and language therapy. All mothers completed the questionnaire while their children were receiving therapy at the IEPSP.

While some parents self-financed their child's treatment (e.g., parents from Serbia, Croatia, and Slovenia), others received funding from their health insurance funds (e.g., parents from Montenegro and Bosnia and Herzegovina)<sup>1</sup>.

It is important to note that all the mentioned countries were once part of the former Republic of Yugoslavia. Therefore, we can infer that participants in our study come from similar linguistic regions, which enables them to understand the questionnaire in the Serbian language. This linguistic similarity contributes to the consistency of responses and minimizes potential language-related biases.

This study was conducted in accordance with the Declaration of Helsinki and complied with APA ethical standards. This study was also approved by the Ethics Committee of the Institute for Experimental Phonetics and Speech Pathology in Belgrade, Serbia (No 2/19, date: 19.9.2019.).

Mothers voluntarily completed the questionnaire and did not receive any payment. The purpose of the research was briefly explained to all respondents, and they were given instructions on how to use the questionnaire. Mothers provided their informed consent to participate in the study. Confidentiality of data was guaranteed, and it was ensured that they would not face any consequences regarding their children's treatment if they refused to participate in the research.

Bartlett's test of sphericity was not significant, indicating that the assumption for conducting ANOVA was satisfied. Statistical comparisons showed that maternal subsamples (in terms of child's diagnosis) were matched with respect to maternal age ( $F_{(2,136)} = .03, p = .973$ ), number of children ( $F_{(2,136)} = 2.03, p = .135$ ) and child's age ( $F_{(2,136)} = 3.01, p = .053$ ). Furthermore, no more than

---

<sup>1</sup> Due to the lack of specialists, system support, and insufficient capacities, health insurance funds send children to obtain treatment in other institutions.

20% of the expected counts were less than 5 and all individual expected counts were 1 or greater. These conditions indicate that the requirement for conducting a Chi-square analysis was also satisfied. Statistical comparisons showed that maternal subsamples (in terms of child's diagnosis) were matched with respect to education ( $\chi^2_{(4)} = 5.36, p = .252$ ) and child's gender ( $\chi^2_{(2)} = 5.32, p = .070$ ).

## Instruments

### *Parenting Stress Index-Short Form (PSI-SF)*

PSI-3/SF<sup>2</sup> (Abidin, 1995) is a self-report inventory comprising 36 statements designed to measure stressful behaviors and feelings related to parenting. Parents rate their agreement with each statement on a five-point Likert scale ranging from 1 (*I do not agree at all*) to 5 (*I completely agree*). The items are loaded on three 12-item factors (subscales): 1) Parental distress (PD) - refers to the stress experienced by an individual as a parent, stemming from various parenting-related factors (items examples: "*I find myself giving up more of my life to meet the needs of my child than I ever expected*" and "*I feel trapped by my responsibilities as a parent*"); 2) Parent-child dysfunctional interaction (PCDI) – refers to the parental perception of the existence or non-existence of dysfunctional interaction with their child (items examples: "*I expected to have closer and warmer feelings for my child than I do, and this bothers me*" and "*My child rarely does things for me that make me feel good*"); 3) Difficult child (DC) - assesses some characteristics of the child that make them more or less demanding (items examples: "*My child seems to cry or fuss more than most children*" and "*My child makes more demands on me than most children*"). The individual subscale scores are added up to form a total score, which indicates the intensity of Total Stress (TS). All three scales in the Parental Stress Instrument have reliability above the recommended .80 level (PCDI:  $\alpha = .818$ , DC:

---

<sup>2</sup> For the purposes of this study, an unauthorized translation of the PSI/SF was utilized. The permission letter to use this unauthorized translation was obtained. For additional information on authorized versions of PSI/SF, please contact PAR (<https://www.parinc.com/>).

$\alpha=.912$ , PD:  $\alpha=.928$ ). Research conducted in Serbia and Bosnia and Herzegovina examining the stress of parents of children with DDs, as well as studies comparing the stress of parents of children with DDs and typically developing children, have demonstrated the utility of this instrument. Indeed, this instrument has demonstrated its capability to not only detect elevated levels of stress in parents of children with DDs but also to discern differences between various groups of parents. Specifically, it can differentiate between parents of children with DDs and those of typically developing children (cf. Čarakovac & Milačić Vidojević, 2019a; Kostić et al., 2017; Milačić Vidojević, 2008; Sudimac, 2017).

### *Brief COPE (BC)*

The Brief COPE (Carver, 1997) is an instrument consisting of 28 statements, scored on a four-point Likert-type scale ranging from 1 (*I have not used this strategy at all*) to 4 (*I have used this strategy often*). The questionnaire assesses 14 coping strategies for dealing with stress: Self-distraction, Active coping, Denial, Substance use, Emotional support, Instrumental support, Behavioral disengagement, Venting, Positive reframing, Planning, Humor, Acceptance, Religion, and Self-blame. Each coping strategy is measured by two items. The reliability of the instrument ranges from .42 to .89, with some subscales exhibiting lower reliability due to having only two items per scale. Considering that the instrument's author notes that there is no general coping index, as different samples exhibit different patterns of relations (Carver, 1997), we decided to follow the author's suggestion and separately use scores from the 14 subscales. The Brief COPE has been used in our region not only with parents of children with DDs but also to examine the relationship between coping strategies and stress (cf. Nolcheva & Trajkovski, 2015).

### *Sociodemographic data*

Mothers were asked to provide sociodemographic data for themselves and their children. They could select from offered options or provide written answers for the following variables: their age, level of education, marital status, employment status, and number of children. Additionally, mothers provided

information about their child with DD, including the type of DD, age, and gender. While the parents provided information about the diagnosis, it was based on assessments by qualified clinicians – the data provided by the mothers were additionally confirmed and verified by official medical documentation.

## Statistical methods

Descriptive statistics were calculated to analyze and describe the sample. One-way ANOVA was used to examine differences between three maternal subsamples in terms of maternal age, number of children, child's age, and stress intensity. Linear regression analyses were conducted to further examine which sociodemographic factors and coping strategies contributed the most to predicting parental stress. To explore whether the relationship between sociodemographic variables and parental stress was mediated by some coping strategies, a series of mediation analyses using the PROCESS macro (Hayes, 2012) for SPSS was conducted.

## Results

### Descriptive measures

Table 1 shows descriptive statistics for the PSI-SF and Brief COPE questionnaires. The results are presented for each subgroup of mothers individually.



**Table 1***Descriptive measures*

	ASD	SDDSL	MSDD
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
PSI Total stress	110.68 (23.97)	82.38 (26.71)	92.61 (21.79)
PSI PD	39.75 (11.98)	30.92 (11.55)	33.45 (12.13)
PSI PCDI	31.15 (7.91)	23.38 (7.66)	26.06 (6.53)
PSI DC	39.51 (9.54)	27.02 (9.99)	32.84 (9.96)
Self-distraction	5.18 (1.88)	4.69 (1.64)	4.68 (2.11)
Active coping	7.24 (.99)	7.08 (1.08)	7.23 (1.13)
Denial	4.41 (2.09)	3.32 (1.56)	3.27 (1.77)
Substance use	2.85 (1.79)	2.35 (.72)	2.68 (1.65)
Self-blame	5.00 (2.21)	4.47 (1.87)	4.82 (2.22)
Behavioral disengagement	2.56 (1.14)	2.28 (.93)	2.50 (1.11)
Venting	4.89 (1.74)	4.23 (1.66)	4.50 (1.80)
Instrumental support	6.06 (1.64)	5.89 (1.81)	6.22 (1.74)
Emotional support	5.87 (2.04)	5.96 (1.81)	5.81 (1.91)
Humor	4.87 (2.10)	4.74 (2.12)	4.53 (2.36)
Acceptance	7.02 (1.37)	6.43 (1.28)	6.76 (1.39)
Positive reframing	7.11 (1.30)	6.44 (1.20)	6.49 (1.48)
Planning	7.04 (1.21)	7.08 (1.04)	6.85 (1.15)
Religion	5.83 (2.28)	4.51 (2.13)	5.94 (2.44)

*Note.* ASD: Autism Spectrum Disorders; SDDSL: Specific Developmental Disorders of Speech and Language; MSDD: Mixed Specific Developmental Disorders; PSI PD: Parenting Stress Index – Parental Distress; PSI PCDI: Parenting Stress Index – Parent-Child Dysfunctional Interaction; PSI DC: Parenting Stress Index – Difficult Child.

## The intensity of maternal stress in relation to the type of child's developmental disorder

One-way ANOVA revealed significant differences between maternal groups in terms of stress intensity (*Total stress*:  $F_{(2,123)} = 6,33$ ,  $p < .001$ , partial  $\eta^2 = .21$ ; *Parental distress*:  $F_{(2,132)} = 7,44$ ,  $p < .05$ , partial  $\eta^2 = .10$ ; *Parent-child dysfunctional interaction*:  $F_{(2,132)} = 13,97$ ,  $p < .001$ , partial  $\eta^2 = .17$ ; *Difficult child*:  $F_{(2,126)} = 19,64$ ,  $p < .001$ , partial  $\eta^2 = .24$ ).

Furthermore, the post-hoc Tukey HSD test indicated that the mean score on the Total stress for the ASD group was significantly higher than the score for the SDDSL group ( $p < .001$ ) and for the MSDD group ( $p < .01$ ). Similar results were also obtained at the subscale level. Specifically, the mean score on the *Parental distress* subscale for the ASD group was significantly higher than the score for the SDDSL group ( $p < .01$ ) and for the MSDD group ( $p < .05$ ). The mean score on the *Parent-child dysfunctional interaction* subscale for the ASD group was significantly higher than the score for the SDDSL group ( $p < .001$ ) and for the MSDD group ( $p < .01$ ). And finally, the mean score on the *Difficult child* subscale for the ASD group was significantly higher than the score for the SDDSL group ( $p < .001$ ) and the MSDD group ( $p < .01$ ), and the mean score for the SDDSL group was significantly lower than the mean score for the MSDD group ( $p < .05$ ). All descriptive measures are shown in Table 1.

Considering that the distribution of certain dependent variables was not normal, the Kruskal-Wallis test was employed as a replacement for the between-subject ANOVA. The results of the Kruskal-Wallis test for all three subscales of parental stress are significant, aligning with the results of ANOVA. Therefore, since ANOVA provides more detailed insight into the results and the possibility of determining the effect size, those results are interpreted.

Taken together, the presented results suggest significant differences between maternal groups in terms of stress intensity. Specifically, our results suggest that mothers who have a child with ASD report the highest stress intensity.

---

## Sociodemographic variables and coping strategies as predictors of parental stress

First, we aimed to determine whether the conditions necessary to conduct the regression analysis were satisfied. The minimal sample needed to conduct a regression analysis with 22 predictors was determined using G\*Power, employing a priori analysis for linear multiple regression with an  $R^2$  of .44, a power of .95, and an alpha error of .05. This analysis indicated a minimal sample size of 60 participants, which is less than the collected. Additionally, all variables exhibited VIF values lower than 5, indicating no issues with multicollinearity. Autocorrelation was also found to be non-significant ( $DW^3 = 1.74, p = .094$ ), and the Breusch-Pagan test revealed no heteroscedasticity ( $BP = 30.3, p = .111$ ). Therefore, all conditions were met to proceed with the regression analysis.

Furthermore, we conducted confirmatory factor analyses to determine if a one-factor solution for PSI-SF could be accepted. We utilized the ULS estimator due to the small sample size, and the model test was based on the Satorra-Bentler scaled test statistic. The model ( $\chi^2_{(560)} = 1751.03, p < .001$ ) demonstrated a good fit in terms of the Comparative Fit Index ( $CFI = 0.944$ ) and the Tucker-Lewis Index ( $TLI = 0.941$ ). The cut-off values were as follows: poor < 0.859 < fair < 0.916 < close, indicating that the model showed a good fit. However, the Root Mean Square Error of Approximation indicated a less satisfactory fit ( $RMSEA = 0.152$ ). Given that these two measures of fit may provide divergent results (Lai & Green, 2016), and considering the already established and suggested factor structure, we opted to accept this solution and utilize the total score in our study.

Regression analyses with Total stress as the outcome variable were conducted to further examine which sociodemographic factors and coping strategies contribute to predicting parental stress. Categorical sociodemographic variables were transformed into dichotomous variables so

---

<sup>3</sup> Durbin-Watson statistic used to detect the presence of autocorrelation.

that they could be used in linear regression analysis. In other words, we created indicator and dummy variables according to Lunt (2015).

Thus, the three-level categorical variable “diagnosis” was transformed into three separate variables: SDDSL, ASD, and MSDD (SDDSL with levels 0-other diagnosis and 1-SDDSL, as well as for ASD and MSDD). The same was done with the “parental education” variable: the three-level categorical variable for education was transformed into three separate variables: Elementary and high school education, University education, and Postgraduate education (Elementary and high school education with levels 0-other levels of education and 1-Elementary and high school education, as well as for University education and Postgraduate education). Hence, the prediction shown in Table 2 involves contrasting the two presented categories of variables with the third category for both “diagnosis” and “education” variables. More specifically, the third, reference value for the variable “diagnosis” was “ASD”, while the reference value for the variable “education” was “Elementary and high school education”.

Regression was conducted in two steps. In the first step, only sociodemographic variables were included, and in the second step, coping strategies were added. Both models were significant, and since the increase in prediction from the first to the second model was significant ( $F_{\text{change}(14, 88)} = 3.47$ ,  $p < .01$ ), a second model with all variables was kept ( $F_{(23, 88)} = 4.84$ ,  $p < .01$ ). This model explains 44.4% of the variance in Total stress. Variables that show a significant contribution to the prediction of stress in the model are SDDSL, MSDD, Self-blame, and Elementary and high school education. Coefficients for all variables are shown in Table 2.

The obtained results indicate that parents of children with SDDSL and MSDD report lower stress in comparison to parents of children with ASD. Furthermore, parents with elementary and high school education, as well as those who use the coping strategy of Self-blame, report higher stress intensity.

**Table 2***Sociodemographic factors and coping strategies as predictors of parental stress*

Variable	<i>B</i>	<i>SE</i>	Beta ( $\beta$ )	<i>t</i>	<i>p</i>
Child's age	-1.19	1.04	-.10	-1.14	.255
Number of children	2.37	2.53	.08	.94	.352
Parental age	.42	.43	.09	.99	.326
Employment	-6.85	4.63	-.12	-1.48	.142
SDDSL	-17.35	5.09	-.31	-3.41	.001*
MSDD	-11.84	5.33	-.19	-2.22	.029*
University degree	-13.61	4.74	-.26	-2.87	.005**
Postgraduate education	-8.72	5.83	-.13	-1.50	.138
Self-distraction	1.40	1.34	.10	1.05	.298
Active coping	-2.24	2.63	-.09	-.85	.398
Denial	1.62	1.25	.12	1.30	.198
Substance use	2.45	1.50	.15	1.64	.105
Self-blame	3.01	1.27	.24	2.36	.020*
Behavioral disengagement	2.68	2.21	.12	1.22	.227
Venting	-.85	1.34	-.05	-.63	.530
Instrumental support	-.66	1.60	-.04	-.41	.683
Emotional support	-2.65	1.55	-.19	-1.71	.091
Humor	.97	1.12	.08	.87	.389
Acceptance	1.28	2.29	.06	.56	.577
Positive reframing	-.30	1.93	-.02	.16	.875
Planning	2.84	2.02	.13	1.41	.163
Religion	1.18	.96	.10	1.23	.224

*Note.* SDDSL: Specific Developmental Disorders of Speech and Language; MSDD: Mixed Specific Developmental Disorders. \*  $p < .05$ . \*\*  $p < .01$ .

## The mediation effect of coping strategies on the relationship between parental stress and sociodemographic factors

To examine whether the relationship between sociodemographic variables and parental stress is mediated by some of the coping strategies, several mediation analyses using the PROCESS macro (Hayes, 2012) for SPSS were conducted. The outcome variable was always Total stress, while predictor variables were either the number of children or the child's age, as these significantly correlated with stress. To satisfy the conditions for mediation analysis, only coping strategies that significantly correlated with both predictors were considered. Consequently, for the child's age as a predictor, the mediators tested were Self-distraction, Substance use, Self-blame, Behavioral disengagement, and Religion. For the number of children, the tested mediators were Behavioral disengagement and Emotional support.

The results have shown that only Religion and Behavioral disengagement mediate the relationship between total stress and a child's age, while the relationship with the number of children is not mediated. The direct effect of a child's age on total stress is not significant ( $b = 1.76$ ,  $t = 1.55$ ,  $p = .124$ , bootstrapped 95% CI [-0.49, 4.02]). The indirect effect of Religion as a mediator is significant, as the confidence interval does not include zero ( $b = 0.57$ , 95% CI [0.024, 1.384]). Having a significant indirect effect and a non-significant direct effect implies that this is a case of full mediation. The same applies to Behavioral disengagement. The direct effect of a child's age on total stress is not significant ( $b = 1.26$ ,  $t = 1.19$ ,  $p = .236$ ), while the indirect effect is ( $b = 1.16$ , 95% CI [0.27, 2.33]). The obtained results indicate that the significant correlation between a child's age and total stress is fully explained by religion and behavioral disengagement. There is no inherent connection between stress and these demographic variables; this connection is explained through coping mechanisms used. In other words, parents of older children are more stressed because they are more prone to using these coping strategies, which increase their stress.

---

## Discussion

Our study indicated that the type of child's DD has a significant effect on maternal perceptions of stress intensity. It was determined that mothers of children with autism spectrum disorders (ASD) report the highest intensity of stress. Such findings are in line with previous research from other countries (Brobst et al., 2008; Giovagnoli et al., 2015; Harper et al., 2013; Pastor-Cerezuela et al., 2016; Rao & Beidel, 2009; Smith et al., 2010), as well as from the Balkans (Bunijevac & Čanadanović-Marinković, 2023; Čarakovac & Milačić Vidojević, 2019a), indicating that parents of children with ASD are under the most stress.

Our results indicate that mothers of children with ASD experience high levels of stress in their parental role. They have impaired awareness of their parental competence, feel stress as a result of limitations in other areas of life, conflict with another parent, and lack of social support. Additionally, these mothers perceive their children as more demanding, as they feel that their children do not meet their expectations, and interaction with the child does not empower them in their parental role. They potentially feel separated or rejected by their children, which indicates that the relationship with the child is compromised or has never been properly established (Pinjatela, 2011). Considering the disorder's clinical picture and the challenges it brings, the obtained results are not surprising. Numerous studies have shown that raising children with ASD is full of everyday challenges and can lead to a decreased sense of parental competence (Preece & Almond, 2008) and self-efficacy (May et al., 2015). ASD symptoms, such as difficulties in achieving social communication and interaction, can affect the establishment of attachment (Rutgers et al., 2007), so we are not surprised by the result that these mothers feel that their relationship with their children is compromised.

Also, sensory difficulties, as well as stereotypical and repetitive patterns of behavior, which are also part of the disorder's clinical picture (DSM-5, 2013), can be particularly pronounced – usually, when ASD is accompanied by intellectual disability, children can also exhibit hyperactive and impulsive behaviors (McClain et al., 2017).

---

Indeed, the challenges associated with autism spectrum disorder (ASD) often lead parents to prioritize spending their free time at home, which can significantly alter their social lives and contribute to feelings of social isolation (Benderix et al., 2007). This combination of factors, including the clinical features of ASD and their associated consequences, appears to contribute to heightened maternal stress intensity in caring for children with ASD. The parents who participated in our study do not seem to differ significantly from those in Western contexts in terms of the stress they experience (Brobst et al., 2008; Giovagnoli et al., 2015; Harper et al., 2013; Pastor-Cerezuela et al., 2016; Rao & Beidel, 2009; Smith et al., 2010) – despite geographical and cultural differences, the experience of having a child with ASD appears to be a universal stressor.

Mothers of children with ASD experience higher stress levels compared to parents of children with SDDSL and MSDD, probably due to the complex nature of ASD symptoms. These symptoms significantly impact daily functioning and necessitate specialized support services, including speech therapy and behavioral interventions (Gillberg & Fernell, 2014), in comparison to children with SDDSL or MSDD, who may require fewer specialized interventions. Moreover, the pervasive challenges of ASD, such as difficulties in social interactions and academic performance, contribute to parental stress. Stigma and social isolation surrounding ASD exacerbate this stress (Daniels, et al., 2017), as parents may feel isolated and face negative perceptions from others. Additionally, the lifelong nature of ASD and uncertainty about the child's future needs further heighten parental stress, including concerns about independent living, employment, and long-term support.

To enhance the well-being of mothers of children with ASD and improve outcomes for both mothers and their children, we propose several practical implications based on our study. Firstly, early access to intervention services is crucial. These services can proactively address ASD-related challenges, reducing parental stress and fostering positive parent-child relationships. Secondly, tailored support for mothers is essential. Targeted programs focusing on stress management and coping strategies specific to ASD-related challenges can alleviate maternal stress. Additionally, comprehensive parental education



programs can equip mothers with the necessary skills to manage stress effectively and enhance their sense of competence in caring for children with ASD. Thirdly, facilitating connections with other parents and providing opportunities for social interaction can mitigate feelings of isolation and offer valuable emotional support. Lastly, recognizing the universality of stressors associated with raising a child with ASD, support programs should be culturally sensitive to diverse caregiving practices and beliefs.

The study revealed no significant differences in the mean scores on the Total Stress, Parental Distress subscale, and Parent-Child Dysfunctional Interaction subscale between parents of children with SDDSL and parents of children with MSDD. However, a significant difference was observed on the Difficult Child subscale. This indicates that parents of children with SDDSL perceive their child's behavior as less challenging compared to parents of children with MSDD. This finding suggests that children with SDDSL may exhibit less severe behavioral patterns or difficulties than those seen in children with MSDD. Considering the symptomatology of these disorders, the results are unsurprising: while SDDSL disrupt normal language acquisition patterns from early development stages, MSDD involve not only language issues but also distorted motor function acquisition and typically some level of cognitive impairment (ICD-10, 2011).

When considering predictors of maternal stress, it's been observed that mothers with elementary and high school education report the highest stress intensity, aligning with previous research findings (Smith et al., 2001). It's reasonable to assume that parents with lower education levels also have lower socioeconomic status, which may result in a greater focus on meeting the child's basic and material needs (Brezis et al., 2015). Additionally, they often report inadequate access to information about professional support services (Pickard & Ingersoll, 2016). Conversely, more educated parents of children with ASD likely possess a greater capacity to recognize and understand their child's difficulties, thereby having better opportunities to provide appropriate treatment. Previous research suggests that parents of children with ASD from higher-income households may demonstrate a stronger commitment to their parenting roles

---

and interaction with the child (Brezis et al., 2015). Moreover, their children tend to receive more professional evaluations and receive diagnoses at an earlier age (Thomas et al., 2011). Mentioned structural barriers can impede the diagnostic process, depriving the child of timely treatment and the parents of the ability to provide effective care, consequently leading to heightened stress levels.

Our results stress the need for tailored support services for mothers with lower education levels. Recognizing the impact of socioeconomic status on parental stress, and early access to evaluations and diagnoses is crucial, especially for children from lower socioeconomic backgrounds. Efforts to address socioeconomic disparities and improve access to resources could alleviate stress and promote better outcomes for these families. Programs focusing on stress management, providing information about support services, and offering assistance in funding treatments could help ease maternal stress. Empowering parents with comprehensive information about available resources can help them better understand their child's needs and access appropriate support.

Furthermore, our study contributes to the discourse surrounding the efficacy and adaptability of various coping strategies. We found that a more frequent use of Self-blame predicts higher stress intensity, suggesting that heightened usage of this strategy correlates with increased parental stress. Self-blame is classified as an *avoidance strategy* (Hastings et al., 2005; Whitehead et al., 2015) and is considered maladaptive, a finding supported by our study. Essentially, mothers who engage in self-criticism regarding past events tend to report higher stress levels. While avoidance coping aims to mitigate distress, it generally proves ineffective in the long term and fails to address the underlying threat and its impact (Skinner et al., 2003), thereby contributing to heightened stress intensity.

The findings suggest that mothers from our study exhibit similarities with Western parents, as our results align with Western studies indicating that avoidance strategies contribute to higher stress levels (Hastings et al., 2005; Whitehead et al., 2015). These results imply that despite geographical and cultural differences, similarities in stress profiles among families of children with

DDs persist. Furthermore, the results suggest a potential inclination among mothers who participated in our study to attribute their children's developmental difficulties to themselves. This could imply a cultural influence, as well as a lack of comprehensive information among mothers regarding the etiology and symptomatology of DDs. More specifically, parents who engage in self-blame may feel a sense of responsibility for their child's DD, perceiving that they somehow contributed to its development or could have done more for their child. This sense of self-blame may stem from a belief that they are being punished for past wrongdoings or inadequacies (Nixon, 1993). Additionally, frequent criticism directed at parents of children with DDs, who may outwardly appear similar to their typically developing peers, may contribute to feelings of inadequacy and self-blame, as the cause of the child's behavior is often attributed to parental shortcomings rather than the disorder itself (Francis, 2012). In the Balkans, societal attitudes towards disability and DDs may play a significant role in shaping parental sense of stigma (Daniels, et al., 2017). Furthermore, cultural norms regarding family roles and responsibilities may also influence the prevalence of Self-blame among parents in the Balkans. Traditional gender roles and expectations within families (Pešić, 2009) may place undue pressure on parents, particularly mothers, to fulfill caregiving duties and assume responsibility for their child's developmental challenges.

We suggest healthcare professionals and support programs prioritize identifying and addressing maladaptive coping strategies among parents of children with DDs. Educational programs aimed at parents and the general public can dispel misconceptions and reduce stigma, thus easing feelings of self-blame and inadequacy. Parents who experience self-blame may benefit from interventions addressing feelings of responsibility and guilt, promoting self-compassion and resilience. Raising awareness and fostering acceptance can support parents, reducing external judgment and improving well-being and parental stress levels. Collaboration among researchers, clinicians, and support organizations is key to developing more effective interventions and support systems for families of children with DDs.

---

The results suggest that Religion and Behavioural disengagement play a mediating role in the relationship between Total stress and a child's age. Parents of older children may experience higher stress levels because they are more likely to utilize coping strategies that ultimately exacerbate their stress. They may turn to work or other activities to distract themselves from the challenges they face or seek solace in religious or spiritual beliefs. As children grow older, families may experience increased stress due to heightened parental concerns about their child's ability to navigate developmental and educational milestones during various phases of the family life cycle (Connolly & Gersch, 2016). Studies have shown that religious coping strategies, such as prayer and seeking solace in spiritual beliefs, are commonly utilized by individuals facing challenging circumstances (Pargament et al., 1998). In the Balkans, religion often plays a significant role in individuals' lives, influencing various aspects of coping with stress and adversity (Pratto et al., 2017). In the context of parenting children with DDs, parents in the Balkans may turn to religious practices as a means of finding comfort and strength in the face of stress and uncertainty.

Additionally, behavioral disengagement, which involves mentally withdrawing from stressful situations and disengaging from problem-solving efforts, may also be observed among parents in the Balkans. Cultural factors, such as stigma surrounding disabilities (Daniels, et al., 2017) and limited access to support services (Međaković et al., 2024), may contribute to feelings of helplessness and resignation among parents, leading to the adoption of avoidance coping strategies. Given the lack of systemic and professional support for older children and adults with DDs in the Balkans (Gosto, 2016), parents may resort to avoidance coping mechanisms more frequently. They may feel disillusioned with seeking assistance and instead turn to prayers and spiritual practices, perhaps because they perceive a lack of available support from existing systems.

Understanding the impact of Religion and Behavioral disengagement on parental stress in relation to a child's age is crucial. Recognizing heightened stress among parents of older children emphasizes the need for tailored support across various family life stages. Addressing the lack of professional assistance

---

for older children and adolescents with DDs underscores the urgent need for enhanced access to resources in the Balkans, including occupational therapy centers, accommodation and daycare facilities for children and youth, and support centers for parents and family members. Encouraging parents to seek assistance from professional networks beyond religious avenues can enhance stress management strategies. Collaborating with policymakers and community organizations is essential for improving systemic support, and advocating for increased resources and services.

The limitations of our sample should be acknowledged. Firstly, only mothers participated in our study, indicating a potential gender bias. Future studies should aim to include parents of both genders to provide a more comprehensive understanding of parental stress in families of children with DDs. Additionally, the inclusion criteria for our sample involved mothers who had already sought treatment for their children's developmental issues. This may have influenced their coping strategies and stress levels, as they may have been more proactive in seeking support and resources. Moreover, the majority of participants in our study had higher levels of education and some self-financed their children's treatments. This suggests a potential bias towards individuals with higher socioeconomic status. Future research should aim to include a more diverse sample that encompasses individuals from various socioeconomic backgrounds to capture a broader spectrum of experiences related to parental stress and coping strategies. It's important to note that our study was conducted using a convenience sample of parents, which may limit the generalizability of our findings to the broader population of parents in the mentioned countries. Indeed, future studies should explore parental stress in older children as well. Longitudinal studies could offer valuable insights into how stress intensity and coping strategies evolve over time for both parents and children. Additionally, including parents of children with various DDs would enrich our understanding of how different conditions impact parental stress and coping strategies.

### Funding

This work was partially supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia within the project “Influence of psychophysiological, sociological, and cultural factors on speech and language in the child population”. This project is realized in cooperation with the Faculty of Medical Sciences, University of Kragujevac, Serbia.

### Conflict of interest

We have no conflicts of interest to disclose.

### Data availability statement

Data used in this paper are available upon a reasonable request.

## References

- Abidin, R. R. (1992). The determinants of parenting behavior. *Journal of Clinical Child Psychology, 21*(4), 407–412. [https://doi.org/10.1207/s15374424jccp2104\\_12](https://doi.org/10.1207/s15374424jccp2104_12)
- Abidin, R. R. (1995). *Parenting Stress Index: Professional manual*. Psychological Assessment Resources.
- Abidin, R. R., Smith, L. T., Kim, H., & Youngstrom, E. A. (2022). Parenting stress. *WikiJournal of Medicine, 9*(1), 3. <https://doi.org/10.15347/wjm/2022.003>
- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders (5th ed.)*. <https://doi.org/10.1176/appi.books.9780890425596>
- Barker, E. T., Hartley, S. L., Seltzer, M. M., Floyd, F. J., Greenberg, J. S., & Orsmond, G. I. (2011). Trajectories of emotional well-being in mothers of adolescents and adults with autism. *Developmental Psychology, 47*(2), 551–561. <https://doi.org/10.1037/a0021268>
- Benderix, Y., Nordström, B., & Sivberg, B. (2007). Parents' experience of having a child with autism and learning disabilities living in a group home: A case study. *Autism, 10*(6), 629–641. <https://doi.org/10.1177/1362361307070902>
- Bhushan Gupta, V. (2007). Comparison of parenting stress in different developmental disabilities. *Journal of Developmental and Physical Disabilities, 19*(4), 417–425. <https://doi.org/10.1007/s10882-007-9060-x>

- Bornstein, M. H., & Hendricks, C. (2013). Screening for developmental disabilities in developing countries. *Social Science & Medicine*, *97*, 307-315.  
<https://doi.org/10.1016/j.socscimed.2012.09.049>
- Brezis, R. S., Weisner, T. S., Daley, T. C., Singhal, N., Barua, M., & Chollera, S. P. (2015). Parenting a child with autism in India: Narratives before and after a parent-child intervention program. *Culture, Medicine, and Psychiatry*, *39*(2), 277–298.  
<https://doi.org/10.1007/s11013-015-9434-y>
- Brobst, J. B., Clopton, J. R., & Hendrick, S. S. (2008). Parenting children with autism spectrum disorders: The couple's relationship. *Focus on Autism and other Developmental Disabilities*, *24*(1), 38-49.  
<https://doi.org/10.1177/1088357608323699>
- Bunijevac, M., & Čanadanović-Marinković, J. (2023). The effect of stress on the quality of the parental role of children with autism. *Research in Education and Rehabilitation*, *6*(1), 46-55. <https://doi.org/10.51558/2744-1555.2023.6.1.46>
- Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine*, *4*(1), 92-100.  
[https://doi.org/10.1207/s15327558ijbm0401\\_6](https://doi.org/10.1207/s15327558ijbm0401_6)
- Chen, K. L., Lao, L. S., & Wu, C. C. (2024). Impact of child behavior problems on parenting stress and depressive symptoms among mothers of children with autism spectrum disorder: mediation of coping strategies. *Journal of Developmental and Physical Disabilities*, *36*, 489–509. <https://doi.org/10.1007/s10882-023-09919-3>
- Connolly, M., & Gersch, I. (2016). Experiences of parents whose children with autism spectrum disorder (ASD) are starting primary school. *Educational Psychology in Practice*, *32*(3), 245–261. <https://doi.org/10.1080/02667363.2016.1169512>
- Cooper, C., Katona, C., Orrell, M., & Livingston, G. (2008). Coping strategies, anxiety and depression in caregivers of people with Alzheimer's disease. *International Journal of Geriatric Psychiatry*, *23*(9), 929–936. <https://doi.org/10.1002/gps.2007>
- Cramer, P. (2003). Personality change in later adulthood is predicted by defense mechanism use in early adulthood. *Journal of Research in Personality*, *37*(1), 76–104. [https://doi.org/10.1016/S0092-6566\(02\)00528-7](https://doi.org/10.1016/S0092-6566(02)00528-7)
- Croatian Institute of Public Health (2022). Mentalni poremećaji u Republici Hrvatskoj. Zagreb: Croatian Institute of Public Health. Retrieved from:  
[https://www.hzjz.hr/wp-content/uploads/2022/09/Bilten\\_Mentalni-poremecaji\\_2022.pdf](https://www.hzjz.hr/wp-content/uploads/2022/09/Bilten_Mentalni-poremecaji_2022.pdf)

- Čarakovac, M., & Milačić Vidojević, I. (2019a). Correlation between the stress of parental role and the intensity and frequency of negative mass life events in the parents of children with autism spectrum disorder, in comparison to the parents of children with typical development. *KNOWLEDGE - International Journal*, 30(5), 1273–1277. Retrieved from: <https://rfasper.fasper.bg.ac.rs/bitstream/id/3261/document.pdf>
- Čarakovac, M., & Milačić Vidojević, I. (2019b). *Differences in coping strategies of parents of children with autism spectrum disorder and parents of typically developing children*. 10<sup>th</sup> International scientific conference Special education and rehabilitation today. Belgrade, October, 25-26<sup>th</sup>, 2019. Retrieved from: <https://rfasper.fasper.bg.ac.rs/bitstream/handle/123456789/3124/Proceedings-2019-CD.pdf?sequence=1&isAllowed=y>
- Čolić, M. (2023). Autism in Serbia: Insights into parental experiences, support networks, and systemic obstacles. *International Journal of Developmental Disabilities*, 1–10. <https://doi.org/10.1080/20473869.2023.2294390>
- Dabrowski, M., & Myachenkova, Y. (2018). *The Western Balkans on the road to the European Union*. Bruegel Policy Contribution, No. 2018/04, Bruegel, Brussels. Retrieved from: <https://www.econstor.eu/bitstream/10419/208011/1/1014693047.pdf>
- Daniels, A. M., Como, A., Hergüner, S., Kostadinova, K., Stosic, J., & Shih, A. (2017). Autism in Southeast Europe: A survey of caregivers of children with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 47, 2314–2325. <https://doi.org/10.1007/s10803-017-3145-x>
- Duarte, C. S., Bordin, I. A., Yazigi, L., & Mooney, J. (2005). Factors associated with stress in mothers of children with autism. *Autism*, 9(4), 416–427. <https://doi.org/10.1177/1362361305056081>
- Džamonja Ignjatović, T., Milanović, M., & Zegarac, N. (2017). How services for children with disabilities in Serbia affect the quality of life of their families. *Research in Developmental Disabilities*, 68, 1-8. <https://doi.org/10.1016/j.ridd.2017.06.009>
- Francis, A. (2012). Stigma in an era of medicalization and anxious parenting: How proximity and culpability shape middle-class parents' experiences of disgrace. *Sociology of Health & Illness*, 34(6), 927-942. <https://doi.org/10.1111/j.1467-9566.2011.01445.x>
- Gau, S. S. F., Chou, M. C., Chiang, H. L., Lee, J. C., Wong, C. C., Chou, W. J., & Wu, Y. Y. (2012). Parental adjustment, marital relationship, and family function in families



- of children with autism. *Research in Autism Spectrum Disorders*, 6(1), 263-270. <https://doi.org/10.1016/j.rasd.2011.05.007>
- Gillberg, C., & Fernell, E. (2014). Autism plus versus autism pure. *Journal of Autism and Developmental Disorders*, 44(12), 3274-3276. <https://doi.org/10.1007/s10803-014-2163-1>
- Giovagnoli, G., Postorino, V., Fatta, L. M., Sanges, V., De Peppo, L., Vassena, L., De Rose, P., Vicari, S., & Mazzone, L. (2015). Behavioral and emotional profile and parental stress in preschool children with autism spectrum disorder. *Research in Developmental Disabilities*, 45–46, 411-421. <https://doi.org/10.1016/j.ridd.2015.08.006>
- Gosto, A. (2016). *Having a child with autistic spectrum disorders in Bosnia and Herzegovina: parents' experiences with coping strategies* (Master's Thesis). Department of Special Needs Education, Faculty of Educational Sciences, University of Oslo. Retrieved from: <https://www.duo.uio.no/bitstream/handle/10852/51294/1/THESIS.pdf>
- Harper, A., Dyches, T. T., Harper, J., Roper, S. O., & South, M. (2013). Respite care, marital quality, and stress in parents of children with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 43(11), 2604-2616. <https://doi.org/10.1007/s10803-013-1812-0>
- Hastings, R., Kovshoff, H., Brown, T., Ward, N., Espinosa, F., & Remington, B. (2005). Coping strategies in mothers and fathers of preschool and school-age children with autism. *Autism*, 9(4), 377–391. <https://doi.org/10.1177/1362361305056078>
- Hayes, A. F. (2012). *PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling* [White paper]. Retrieved from <http://www.afhayes.com/public/process2012.pdf>
- Herring, S., Gray, K. M., Taffe, J. R., Tonge, B. J., Sweeney, D. J., & Einfeld, S. L. (2006). Behaviour and emotional problems in toddlers with pervasive developmental disorders and developmental delay: Associations with parental mental health and family functioning. *Journal of intellectual disability research*, 50(Pt 12), 874-882. <https://doi.org/10.1111/j.1365-2788.2006.00904.x>
- Ibrahimagic, A., Junuzovic-Zunic, L., Duranovic, M., & Radic, B. (2015). Autism treatment in special schools in Bosnia and Herzegovina. *Special Education*, 1, 119-131.
- Ilić, S. B., Nikolić, S. J., Ilić-Stošović, D. D., & Golubović, Š. S. (2020). Early identification of children with developmental delay and behavioural problems according to parents concerns in the Republic of Serbia. *Early Child Development and Care*, 190(16), 2605–2611. <https://doi.org/10.1080/03004430.2019.1595610>

- Kosić, R., Duraković Tatić A., Petrić, D., & Kosec, T. (2021). The impact of autism spectrum disorders on the family. *Medicina Fluminensis*, 57(2), 139-149. [https://doi.org/10.21860/medflum2021\\_371644](https://doi.org/10.21860/medflum2021_371644)
- Kostić, J., Milosavljević, L., & Stanković, M. (2017). Evaluation of stress and support to parents of children with developmental disabilities—our experience. *European Psychiatry*, 41(S1), S215-S215. <https://doi.org/10.1016/j.eurpsy.2017.01.2191>
- Lai, K., & Green, S. B. (2016). The problem with having two watches: Assessment of fit when RMSEA and CFI disagree. *Multivariate Behavioral Research*, 51(2-3), 220-239. <https://doi.org/10.1080/00273171.2015.1134306>
- Lopez, V., Clifford, T., Minnes, P., & Ouellette-Kuntz, H. (2008). Parental stress and coping in families of children with and without developmental delays. *Journal on Developmental Disabilities*, 14(2), 99-104.
- Lunt, M. (2015). Introduction to statistical modelling 2: Categorical variables and interactions in linear regression. *Rheumatology*, 54(7), 1141–1144. <https://doi.org/10.1093/rheumatology/ket172>
- Matišić, I. (2021). *Stres i otpornost obitelji djeteta s poremećajem spektra autizma* (Master's thesis). University of Zagreb, Faculty of Education and Rehabilitation Sciences. Retrieved from: <https://urn.nsk.hr/urn:nbn:hr:158:334675>
- May, C., Fletcher, R., Dempsey, I., & Newman, L. (2015). Modeling relations among coparenting quality, autism-specific parenting self-efficacy, and parenting stress in mothers and fathers of children with ASD. *Parenting: Science and Practice*, 15(2), 119-133. <https://doi.org/10.1080/15295192.2015.1020145>
- May, M., & Hansen, B. (2016). Strength-based assessment for children with autism and related disabilities in Bosnia. *Journal of Undergraduate Research*, 2016(1), article 7. Retrieved from: <https://scholarsarchive.byu.edu/jur/vol2016/iss1/7>
- McClain, B., Hasty Mills, A. M., & Murphy, L. E. (2017). Inattention and hyperactivity/impulsivity among children with attention-deficit/hyperactivity-disorder, autism spectrum disorder, and intellectual disability. *Research in Developmental Disabilities*, 70, 175-184. <https://doi.org/10.1016/j.ridd.2017.09.009>
- Međaković, J., Čivljak, A., Zorčec, T., Vučić, V., Ristić-Medić, D., Veselinović, A., Čivljak, M., & Puljak, L. (2024). Perceptions on support, challenges and needs among parents and caregivers of children with developmental disabilities in Croatia, North Macedonia and Serbia: A cross-sectional study. *BMC Pediatrics*, 24, 297. <https://doi.org/10.1186/s12887-024-04770-7>
- Milačić Vidojević, I. (2008). Stress in parents of autistic children. *Psihijatrija Danas*, 40(1), 37-49. Retrieved from: <http://rfasper.fasper.bg.ac.rs/handle/123456789/169>

- Ministry of Health - Government of Montenegro (2018). *Strategija zaštite i unapređenja mentalnog zdravlja u Crnoj Gori 2019–2023*. Retrieved from: <https://www.gov.me/dokumenta/60af25aa-a65e-4957-84d8-e77a3182ab9b>
- Miranda, A., Mira, A., Berenguer, C., Rosello, B., & Baixauli, I. (2019). Parenting stress in mothers of children with autism without intellectual disability. *Mediation of Behavioral Problems and Coping Strategies. Frontiers in Psychology, 10*(464). <https://doi.org/10.3389/fpsyg.2019.00464>
- Nedović, G., Sretenović, I., Potić, S., & Arsić, R. (2016). Early intervention in the world: implications for improvement in Serbia. In *Early intervention in special education and rehabilitation* (Ed. S. Nikolić, R. Nikić, V. Ilanković). pp. 25-41. University of Belgrade – Faculty of Special Education and Rehabilitation. Retrieved from: <http://fasper.fasper.bg.ac.rs/handle/123456789/2525>
- Negri, L. M., & Castorina, L. L. (2014). Family adaptation to a diagnosis of autism spectrum disorder. *Handbook of Early Intervention for Autism Spectrum Disorders, 117-137*.
- Negri, L., & Castorina, L. (2014). Family Adaptation to a Diagnosis of Autism Spectrum Disorder. In: Tarbox, J., Dixon, D., Sturmey, P., Matson, J. (Eds.) *Handbook of Early Intervention for Autism Spectrum Disorders*. Autism and Child Psychopathology Series. Springer, New York, NY. [https://doi.org/10.1007/978-1-4939-0401-3\\_7](https://doi.org/10.1007/978-1-4939-0401-3_7)
- Niřmatuzahroh, S. M. W., Ningrum, V., Widayat, Y. M. S., Hasanati, N., & Wang, J. H. (2022). The association between parenting stress, positive reappraisal coping, and quality of life in parents with autism spectrum disorder (ASD) children: A systematic review. *Healthcare, 10*(1), 52. <https://doi.org/10.3390/healthcare10010052>
- Nixon, C. D. (1993). *Reducing self-blame and guilt in parents of children with severe disabilities*. In G. H. S. Singer & L. E. Powers (Eds.), *Families, disability, and empowerment: active coping skills and strategies for family interventions* (pp. 175-201). Baltimore, MD: Paul H. Brookes Publishing Co.
- Nolcheva, M., & Trajkovski, V. (2015). Exploratory study: Stress, coping and support among parents of children with autism spectrum disorders. *Journal of Special Education and rehabilitation, 16*(3–4), 84–100. <https://doi.org/10.1515/jser-2015-0013>
- Norizan, A., & Shamsuddin, K. (2010). Predictors of parenting stress among Malaysian mothers of children with Down syndrome. *Journal of Intellectual Disability Research, 54*(11), 992-1003. <https://doi.org/10.1111/j.1365-2788.2010.01324.x>

- Östberg, M., & Hagekull, B. (2000). A structural modeling approach to the understanding of parenting stress. *Journal of Clinical Child Psychology, 29*(4), 615–625. [https://doi.org/10.1207/S15374424JCCP2904\\_13](https://doi.org/10.1207/S15374424JCCP2904_13)
- Pastor-Cerezuela, G., Fernández-Andrés, M. I., Tárraga-Mínguez, R., & Navarro-Peña, J. M. (2016). Parental stress and ASD: Relationship with autism symptom severity, IQ, and resilience. *Focus on Autism and Other Developmental Disabilities, 31*(4), 300–311. <https://doi.org/10.1177/1088357615583471>
- Pejovic-Milovancevic, M., Stankovic, M., Mitkovic-Voncina, M., Rudic, N., Grujicic, R., Herrera, A. S., Stojanovic, A., Nedovic, B., Shih, A., Mandic-Maravic, V., & Daniels, A. (2018). Perceptions on support, challenges and needs among parents of children with autism: The Serbian experience. *Psychiatria Danubina, 30*(6), 354–364. Retrieved from: <https://hrcak.srce.hr/262938>
- Pargament, K. I., Smith, B. W., Koenig, H. G., & Perez, L. (1998). Patterns of positive and negative religious coping with major life stressors. *Journal for the Scientific Study of Religion, 37*(4), 710–724. <https://doi.org/10.2307/1388152>
- Pešić, J. (2009). *Patrijarhalnost na Zapadnom Balkanu, komparativna analiza vrednosnih orijentacija* – in: Porodice u Srbiji danas u komparativnoj perspektivi (A. Milić, S. Tomanović, eds.) Beograd, Institut za sociološka istraživanja Filozofskog fakulteta u Beogradu i Čigoja štampa.
- Peters-Scheffer, N., Didden, R., & Korzilius, H. (2012). Maternal stress predicted by characteristics of children with autism spectrum disorder and intellectual disability. *Research in Autism Spectrum Disorders, 6*(2), 696–706. <https://doi.org/10.1016/j.rasd.2011.10.003>
- Piazza, V. E., Floyd, F. J., Mailick, M. R., & Greenberg, J. S. (2014). Coping and psychological health of aging parents of adult children with developmental disabilities. *American Journal on Intellectual and Developmental Disabilities, 119*(2), 186–198. <https://doi.org/10.1352/1944-7558-119.2.186>
- Pickard, K. E., & Ingersoll, B. R. (2016). Quality versus quantity: the role of socioeconomic status on parent-reported service knowledge, service use, unmet service needs, and barriers to service use. *Autism, 20*(1), 106–15. <https://doi.org/10.1177/1362361315569745>
- Pinjatela, R. (2011). *Influence of biopsychosocial factors on early mother-child interaction*. (Dissertation). Zagreb: Edukacijsko-rehabilitacijski fakultet.
- Pistoljevic, N., Dzanko, E., & Ghaziuddin, M. (2021). Practice patterns and potential barriers to early diagnosis of autism in Bosnia and Herzegovina: A preliminary

- study. *Journal of Autism and Developmental Disorders*, 51, 4447–4455.  
<https://doi.org/10.1007/s10803-021-04875-3>
- Pratto, F., Žeželj, I., Maloku, E., Turjačanin, V., & Branković, M. (Eds.). (2017). *Shaping social identities after violent conflict: Youth in the Western Balkans*. Cham, Switzerland: Palgrave Macmillan. <https://doi.org/10.1007/978-3-319-62021-3>
- Preece, D., & Almond J. (2008). Supporting families with children on the autism spectrum to use structured teaching approaches in the home and community. *Good Autism Practice*, 9(2), 44–53. Retrieved from:  
<http://www.ingentaconnect.com/content/bild/gap/2008/00000009/00000002/art00009>
- Rao, P. A., & Beidel, D. C. (2009). The impact of children with high-functioning autism on parental stress, sibling adjustment, and family functioning. *Behavior Modification*, 33(4), 437–451. <https://doi.org/10.1177/0145445509336427>
- Rutgers, A. H., van Ijzendoorn, M. H., Bakermans-Kranenburg, M. J., Swinkels, S. H. N., van Daalen, E., Dietz, C., Naber, F. B. A., Buitelaar, J. K., & van Engeland, H. (2007). Autism, attachment and parenting: A comparison of children with autism spectrum disorder, mental retardation, language disorder, and non-clinical children. *Journal of Abnormal Child Psychology*, 35(5), 859–870.  
<https://doi.org/10.1007/s10802-007-9139-y>
- Shtayermman, O. (2013). Stress and marital satisfaction of parents to children diagnosed with autism. *Journal of Family Social Work*, 16(3), 243–259.  
<https://doi.org/10.1080/10522158.2013.786777>
- Sim, A., Cordier, R., Vaz, S., Netto, J., & Falkmer, T. (2017). Factors associated with negative co-parenting experiences in families of a child with autism spectrum disorder. *Developmental Neurorehabilitation*, 20(2), 83–91.  
<https://doi.org/10.3109/17518423.2015.1069414>
- Sinha, D., Verma, N., & Hershe, D. (2016). A comparative study of parenting styles, parental stress and resilience among parents of children having autism spectrum disorder, parents of children having specific learning disorder and parents of children not diagnosed with any psychiatric disorder. *Annals of International Medical and Dental Research*, 2(4), 106–111.  
<https://doi.org/10.21276/aimdr.2016.2.4.30>
- Sivberg, B. (2002). Family system and coping behaviors: A comparison between parents of children with autistic spectrum disorders and parents with non-autistic children. *Autism*, 6(4), 397–409. <https://doi.org/10.1177/1362361302006004006>

- Skinner, E. A., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: A review and critique of category systems for classifying ways of coping. *Psychological Bulletin*, 129(2), 216–269. <https://doi.org/10.1037/0033-2909.129.2.216>
- Službeni glasnik (2019). *Program o zaštiti mentalnog zdravlja u Republici Srbiji za period 2019-2026. godine*. br. 84/2019. Retrieved from: [https://www.zdravlje.gov.rs/view\\_file.php?file\\_id=1199&cache=sr](https://www.zdravlje.gov.rs/view_file.php?file_id=1199&cache=sr)
- Smith, T. B., Oliver, M. N. I., & Innocenti, M. S. (2001). Parenting stress in families with children with disabilities. *American Journal of Orthopsychiatry*, 71(2), 257-261. <https://doi.org/10.1037/0002-9432.71.2.257>
- Smith, L. E., Hong, J., Mailick Seltzer, M., Greenberg, J. S., Almeida, D. M., & Bishop, S. L. (2010). Daily experiences among mothers of adolescents and adults with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 40(2), 167–178. <https://doi.org/10.1007/s10803-009-0844-y>
- Stoll-Egger, S. (2019). *Complicated grief of ambiguous loss in parents of children with autism* (Doctoral thesis). Faculty of Pacific Graduate School of Psychology Palo Alto University. Retrieved from: <https://www.proquest.com/docview/2298099540/abstract/9E364C183E4448D2PQ/1>
- Stošić, J., Lisak Šegota, N., & Preece, D. (2022). Primary teachers' knowledge and attitudes about autism, and experience of good practice approaches: Implications for policy and practice in Croatia. *Support for Learning*, 37(4), 573-588. <https://doi.org/10.1111/1467-9604.12429>
- Stuart, M., & McGrew, J. H. (2009). Caregiver burden after receiving a diagnosis of an autism spectrum disorder. *Research in Autism Spectrum Disorders*, 3(1), 86-97. <https://doi.org/10.1016/j.rasd.2008.04.006>
- Sudimac, S. (2017). *Parental perceptions of socio-emotional responsiveness of children with ASD and children's impact on the family as factors of parental stress*. Proceedings of the XXIII scientific conference empirical studies in psychology, March 24-26, Faculty of philosophy, University of Belgrade, pp. 170-175.
- Tehee, E., Honan, R., & Hevey, D. (2009). Factors contributing to stress in parents of individuals with autistic spectrum disorders. *Journal of Applied Research in Intellectual Disabilities*, 22(1), 34-42. <https://doi.org/10.1111/j.1468-3148.2008.00437.x>

- Thomas, P., Zahorodny, W., Peng, B., Kim, S., Jani, N., Halperin, W., & Brimacombe, M. (2011). The association of autism diagnosis with socioeconomic status. *Autism, 16*(2), 201–213. <https://doi.org/10.1177/1362361311413397>
- UNICEF (2017). *Situaciona analiza o položaju djece sa poteškoćama u Bosni i Hercegovini*. UNICEF. Retrieved from: <https://www.unicef.org/bih/media/376/file/Situaciona%20analiza%20o%20polo%C5%BEaju%20djece%20sa%20pote%C5%A1ko%C4%87ama%20u%20BiH.pdf>
- Vernhet, C., Dellapiazza, F., Blanc, N., Cousson-Gélie, F., Miot, S., Roeyers, H., & Baghdadli, A. (2019). Coping strategies of parents of children with autism spectrum disorder: A systematic review. *European Child & Adolescent Psychiatry, 28*, 747–758. <https://doi.org/10.1007/s00787-018-1183-3>
- Wang, P., Michaels, C. A., & Day, M. S. (2011). Stresses and coping strategies of chinese families with children with autism and other developmental disabilities. *Journal of Autism and Developmental Disorders, 41*(6), 783–795. <https://doi.org/10.1007/s10803-010-1099-3>
- Weiss, J. A., & Lunskey, Y. (2011). The brief family distress scale: A measure of crisis in caregivers of individuals with autism spectrum disorders. *Journal of Child and Family Studies, 20*, 521–528. <https://doi.org/10.1007/s10826-010-9419-y>
- Weiss, J. A., Wingsong, A., & Lunskey, Y. (2014). Defining crisis in families of individuals with autism spectrum disorders. *Autism, 18*(8) 985–995. <https://doi.org/10.1177/1362361313508024>
- Whitehead, K., Dorstyn, D., & Ward, L. (2015). Psychological adjustment in families affected by autism spectrum disorder. *Journal of Developmental and Physical Disabilities, 27*(5), 703–717. <https://doi.org/10.1007/s10882-015-9446-0>
- World Health Organization (2011). *International Statistical Classification of Diseases and Related Health Problems: Instruction Manual*. 10th revision. Vol. 2. Geneva: WHO.







Research Article

# Gender differences in left-right ideology: European men are more right-wing, women are more centrist?

Aleksandra Trogrlić <sup>1</sup>  , Bojan Todosijević <sup>2</sup> 

<sup>1</sup>Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia

<sup>2</sup>Institute of social sciences, Belgrade, Serbia

## ABSTRACT

Since the 1990s, women appear to have become more left-wing or liberal-oriented compared to men (Dassonneville, 2020). In this paper, we examine whether this observation holds in the more recent survey data from Europe. We show that the exclusive focus on differences in average scores provides an incomplete picture of gender differences in ideology. Since both men and women tend to be centrist, the observed gender differences in averages may be due to differences in the relative popularity of the middle point of the scale. The analysis uses the ninth wave of the European Social Survey data (ESS 9.3), which covers 29 European countries. The results show that European women are, indeed, on average, positioned to the left compared to men. However, additional analyses revealed that these differences are partly due to men's preference for rightist ideological positions and partly to women's relatively more frequent positioning on the scale midpoint.

*Keywords:* left-right ideology, gender differences, public opinion, Europe

UDK: 159.922:316.75(4)

DOI: 10.19090/pp.v17i4.2545

Received: 03.04.2024.

Revised: 04.08.2024.

Accepted: 23.08.2024.



Copyright © 2024 The Author(s).

This is an open access article distributed under the terms of the [Creative Commons Attribution License](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

 Corresponding author email: [atrogrlic@ff.uns.ac.rs](mailto:atrogrlic@ff.uns.ac.rs)

---

## Introduction

A considerable research effort has been spent on the question of gender differences in ideology. Not only because it is an interesting and provocative question but also because it is a moving target. Those gender differences and similarities vary over time and space. Hence, new evidence is always a useful addition to the ongoing, perhaps never-ending, research endeavor. Examining the changes over time and differences across contexts is necessary in order to better understand – and explain – the factors behind the observed tendencies.

In this paper, we analyze the gender differences in left-right ideology in 29 European countries, available in the ESS 9 dataset (2018). We consider this study as an update to Dassonneville's (2020) analysis of trends in gender differences in left-right ideology over time. In her analysis based on data covering the period from the 1970s until 2018, and a number of European countries, she concluded that since the 1990s, women have become more left-wing compared to men in their subjective ideology.

This impressive analysis of changing trends over time shows that gender differences in ideology are not fixed but change over time and that theoretical accounts need to evolve accordingly. Moreover, this implies that continued research on the ideological gender gap and a comparative approach are needed.

Dassonneville's (2020) study focuses on trends in average scores on the left-right scale. However, while averages provide important information, it is actually minimal information. Gender differences may appear in other aspects of the distribution of left-right scores and could be overlooked if the attention remains focused on averages.

This paper contributes in three directions, as implied in the previous paragraphs. We present findings from more recent surveys, we include a larger number of European countries, and we present a more detailed analysis of gender differences – including the comparison of distributions. Our analysis starts with a very brief presentation of the previous research and relevant theoretical background. Next, we present the data and research method. We

continue with the results and finish with the discussion and the overall conclusions.

## Theoretical background

The 'traditional gender gap', meaning a more conservative or right-wing orientation of women, has been first described in the US – women tended disproportionately to support conservative candidates and policies (e.g., Manza & Brooks, 1998; Shapiro & Mahajan, 1986). Studies in Europe from the same period revealed similar gender differences, though with significant variation between countries (e.g., Baxter & Lansing, 1983). More recently, researchers in Europe and elsewhere have written about the 'modern gender gap', the situation "in which women offer disproportionate support to the left side of the political spectrum." (Giger, 2009, p. 475; Abendschön & Steinmetz, 2014; Dassonneville, 2020).

Explanations of ideological gender differences that researchers observed in different periods are diverse. The literature often emphasizes sociological factors as influencing the observed ideological differentiation among the genders. In the US, the current gap originated from the Reagan era, when men moved to the conservative side, but women separated, and a significant proportion remained attached to liberal positions (Norrander & Wilcox, 2008). According to Norrander and Wilcox, "The increasing number of liberal women comes primarily from changing demographics. Well-educated and single women have always been more liberal than their less educated and married counterparts, and over time they have become more numerous in the population." (2008, p. 521).

A similar socio-structural explanation has been examined in the European context. According to Nathalie Giger, for instance, the formation of the new gender gap in voting behavior in Europe is an ongoing process: "Women tended to vote more for conservative parties in the 1970s, while in the new millennium, they have given higher support to left parties. The speed of this development differs cross-nationally, and not all countries reached the state of a modern gender gap (where women lean left)." (2009, p. 474). The author, however, did not reach a reliable conclusion regarding the explanation of the

---

new gender gap. She concluded that at the macro level, the "increased female labor force participation explains the emergence of a modern gender gap" (Giger, 2009, p. 486). Yet, at the individual level, it appeared that structural factors were not successful in explaining the modern gender gap.

The literature also suggests that modernization, and especially post-modernization, has contributed to women's leftward political and ideological transition (e.g., Inglehart & Norris, 2000, 2003). Summarizing the extant research, Dassonneville suggests that the increased labor market participation combined with commonly encountered pay disparity, increased education, and secularization are factors quoted in the literature as affecting the women's leftward ideological transition (Dassonneville, 2020; Giger, 2009; Inglehart & Norris 2000; Iversen & Rosenbluth 2006).

Some authors argue that even more fundamental forces may be at play in the recently observed women's leftward political transition. According to Sidanius and his coworkers, psychological and evolutionary forces are relevant. In their own words, "The invariance hypothesis from social dominance theory maintains that, everything else being equal, males will have higher levels of group dominance orientation than women." (Sidanius et al. 1995, p. 381). In the political vocabulary, this means that women's 'natural' political position is on the left relative to men. The liberation of women that has spread globally (incompletely, though) simply allowed these, so to say, natural tendencies to manifest.<sup>1</sup>

Finally, there are also more mundane factors that seem to be contributing to the observed gender differences. According to Burden (2008), for instance, methodology matters – in particular, how the relevant questions are asked. In the context of the USA, if a respondent is asked: "Generally

---

<sup>1</sup> Egalitarian societies in fact may allow the expression of gender differences in some cases. According to Lipka (2010, p. 619), for instance, "United Nations indices of gender equality and economic development were associated with larger sex differences in agreeableness, but not with sex differences in other traits", which led the author to the conclusion that "culture plays a negligible to small role in moderating sex differences in personality."

speaking, do you usually think of yourself as a Republican, a Democrat..." the usual gender gap is observed. However, if the question asks, "Generally speaking, do you usually *feel* that you are a Republican, a Democrat, an Independent, or what?" the gender gap is reduced. The word 'feel' reduces the gap, leading Burden to conclude, somewhat contrary to the common stereotype, that "altering the party identification questions to mention feeling rather than thinking causes a shift among women in the Republican direction" (Burden, 2008, p. 69).

Regardless of the methodological challenges, the overall weight of recent evidence is that recent decades witnessed the changing gender differences in ideology. This trend, or, in her words, realignment, is nicely outlined in Dassonneville's (2020) paper - as the shift in women's average position towards the left side of the spectrum compared to men.

Her analysis includes data from 36 OECD countries (mostly West European and North American) and covers the period from 1973 until 2018. Surveys from the 1970s and 1980s depict women as being, on average, somewhat more on the conservative or right-wing side. Since the 1990s, women have become more left-wing or liberal-oriented compared to men. The change affected women's position mostly, while men, on average, did not change their own ideological position much. However, significant cross-country variations have been observed.

It is worth noting that both genders, on average, occupy centrist positions. On a 1-10 scale, the estimated average for women at the end of the study period (2018) was 5.08, while in the 1970s, it was around 5.60. For men, the change was only approximately 0.10, from around 5.40 in the 1970s to 5.30 four decades later.

We would like particularly to draw attention to the magnitude of the main change. Among women, the change involves about 0.5 points on the 10-point scale. The difference between genders over most of the 2010s is around 0.1 points, while around 2018, it grew to about 0.2 points. So, the observed 'gender gap' is actually a tiny gap but statistically significant and certainly noteworthy given the diversity of the analyzed studies and countries covered.

---

While this very sketchy overview of the literature lists a variety of explanations for the observed trend – political, social, and psycho-biological – this paper is concerned with a more descriptive task. Since the 'gender gap' in ideology has been changing over time and is not constant cross-culturally, the need for continued descriptive research, which would include a larger number of countries, is obvious. If the description of a phenomenon is insufficiently accurate, explanations are likely to be imperfect.

While in this study we simply expect the continuation of the observed tendencies – slightly higher average left-right scores among women, we argue that the issue of gender differences in ideology deserves a slightly more appropriate analytic approach than has commonly been the case. We are, in particular, concerned with the way gender differences are observed. Namely, the literature typically compares arithmetic means. However, as it is well known, phenomena may have different distributions while having the same averages. Likewise, averages can statistically differ, and yet the significance of those differences may be substantively inconsequential.

In this paper, we propose that, in addition to examining differences in averages, it may be fruitful to pay attention also to the potential gender differences in distributions of the left-right ideological dimension. This extension of the focus may provide some additional insight relevant to the understanding of the observed differences in the averages, which in turn may require fresh revision of the common theoretical accounts.

In particular, we believe that the observation that the left-right self-placement scale indicates prevalent "centrism" (Rodon, 2015; Knutsen, 1998) in most countries needs to be given due attention. Although the exact meaning of self-placements in the middle of the scale (not just this particular scale but more generally) is not clear, it may be relevant when formulating research conclusions. Rodon (2015), for instance, found that ideological 'centrism' often means a lack of political sophistication. Since the relative 'popularity' of the scale mid-point may affect the gender differences in averages, the differences in sophistication may be interpreted as ideological differences. Even if the centrist placements

do represent 'genuine' positioning, it is important to be aware of the contribution of ideological centrism to the overall gender differences.

According to the directional model of spatial voting, it is the *side* of the dimension relative to the neutral point that matters (e.g., Macdonald & Rabinowitz, 1993; Macdonald et al., 1995; Rabinowitz & Macdonald, 1989; Tiemann, 2022). From the directional angle, the middle of the left-right dimension is not so much 'centrist' but rather neutral, undecided, or "spatially indifferent" in Rodon's (2021) words.

## Method

We begin the analysis by comparing the basic distribution of responses to the left-right self-placement scale among men and women. The aim here is to check whether the gender differences in ideology observed by Dassonneville still hold. We expect that they do, as our data continue the timeline where the latest Dassonneville cases end.<sup>2</sup> Thus, our study has a confirmatory dimension concerning their descriptive conclusions about the ideological gender gap in the 2010s.

In the second and more innovative part of the analysis, we examine the gender differences in more detail – by comparing the distributions rather than simply comparing averages. We also examine country cases in more detail in order to have a better picture of the Europe-wide presence of the modern gender gap. Note also that we include some European countries that were not part of Dassonneville's analysis.

---

<sup>2</sup> Most of their data series end in 2016 and 2017, while some end already in 2013 (Japan) and 2014 (Iceland and New Zealand). Only two cases have the latest data collected in 2018 - Hungary and Italy (see Dassonneville, 2020, Appendix, Table 1). In the ESS 9 dataset that we use, Hungarian data are collected entirely in 2019, while the Italian data collection started in December 2018, so there is basically no time overlap between our and Dassonneville's data).

---

## Data and samples

The paper utilizes data from the European Social Survey (Round 9). The interviews were conducted in 29 European countries during 2018 and 2019, using the CAPI interview mode.<sup>3</sup> In each country, the ESS surveys are based on nationally representative random samples. The complete ESS 9 dataset (Edition 3.1, Production date: February 7, 2021) includes around 49,000 respondents (unweighted).<sup>4</sup> Some analyses in this paper are based on the entire ESS sample, and some analyses are limited to individual countries.

## Variables

The ESS study uses an 11-point scale left-right scale, which, according to Kroh (2007), is methodologically superior to alternative versions of the scale (e.g., 10-point, 7-point, etc.). Distribution of this variable by gender is given in the Results section (see Figure 4). In ESS9 data, gender is coded as a binary variable (female and male), where 51.45% of the gross sample is coded female (weighted by *pspwght*).

## Data weighting

In the analyses of the integral ESS 9 sample, unless otherwise noted, we use the weight *wcpsp*. This weight combines the ESS-provided *pspwght*, which corrects for sampling and demographic biases, and our own weight designed to equalize the sample sizes for all included countries. Namely, the relevant aggregate unit here is a political system, i.e., a country. Since the goal is not to generalize to an abstract 'European population', and the arbitrary differences in the sizes of the samples need to be eliminated, we have to ensure that countries have equal contributions towards the final results.

---

<sup>3</sup> In most countries, the data collection spanned across 2018 and 2019, and in several cases extended into 2020. In eight countries data collection started in 2019, while the earliest study begun in September 2018.

<sup>4</sup> For more information about the dataset and the ESS project, see [doi:10.21338/NSD-ESS9-2018](https://doi.org/10.21338/NSD-ESS9-2018).



The benefit of focusing on a single project is clear – ESS studies are characterized by methodological rigor and focus on securing high-quality data specifically designed for comparative research.

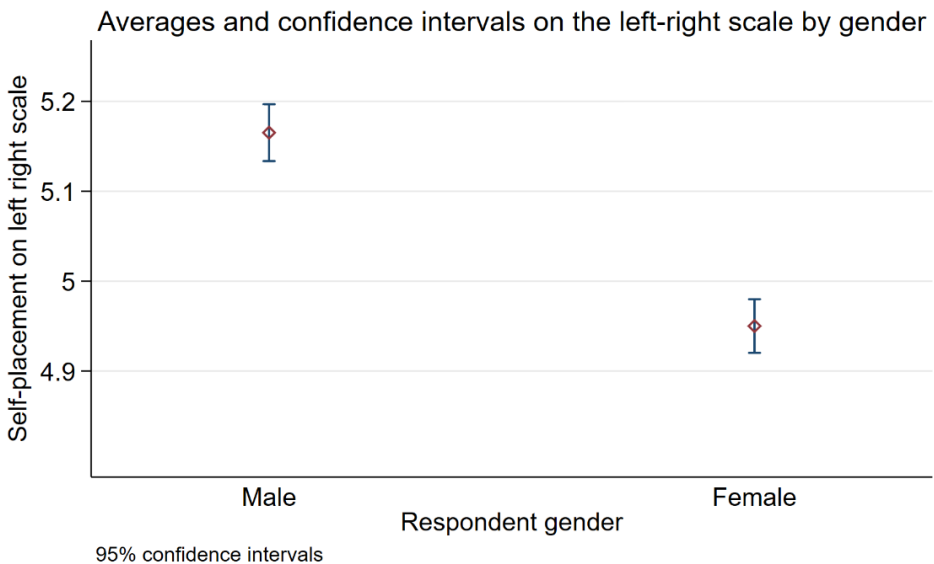
## Results

### Average left-right scores in Europe

Our first research question is: Are there any systematic differences between men and women in their average left-right self-positioning in different countries? According to the results presented in Figure 1, European women are indeed slightly more leftist compared to men (as represented by the ESS sample of countries). Male respondents, on average, place themselves in the position of 5.17, while the average women's position is 4.95.

**Figure 1**

*Averages and confidence intervals of male and female respondents on the left-right self-placement scale*



*Note.* Data source: ESS 9.3 data; weighted by *wcsp*.

---

Obviously, both genders are quite centrist ideologically, yet the difference is statistically significant. The size of the absolute difference between the means is  $5.165 - 4.950 = .215$ , which is similar to the findings presented by Dassonneville (2020) and Hatem (2021), for instance. The observed difference corresponds to Cohen's  $d$  of the magnitude .09, which is, as a 'rule of thumb,' considered a small effect, equivalent to the correlation of  $r = .05$ . Still, it is highly statistically significant due to the overall sample size. Thus, we can conclude that the modern gender gap in ideology continues to thrive in Europe - on average, European (meaning ESS 9) women posit themselves as slightly more left-wing compared to European men. The realignment observed by Dassonneville in the 2000s is continued, as testified by the ESS 9 data from 2018 and 2019.

### Gender differences in left-right ideology within European countries

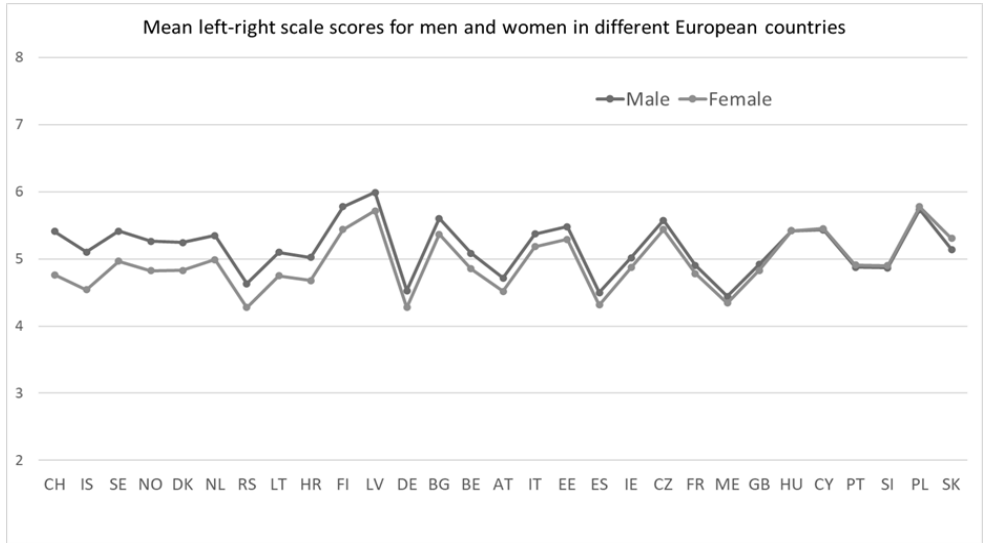
Dassonneville's data also showed notable differences between countries. Hence, the next question we address is: does this gender gap characterize all examined countries in 2018 and 2019? (Figure 2; see also Figure 3) plots the average scores separately for male and female respondents in each of the 29 countries in the ESS 9 sample (the exact numbers are presented in Table 1, in Supplementary materials). Countries on the horizontal axis are ordered according to the size of the gender gap (a larger gap is on the left).<sup>5</sup>

---

<sup>5</sup> Here, data are weighted with the original ESS weight *pspwght*, which is suitable for obtaining individual country estimates.

**Figure 2**

*Average left-right scores by gender in Europe*

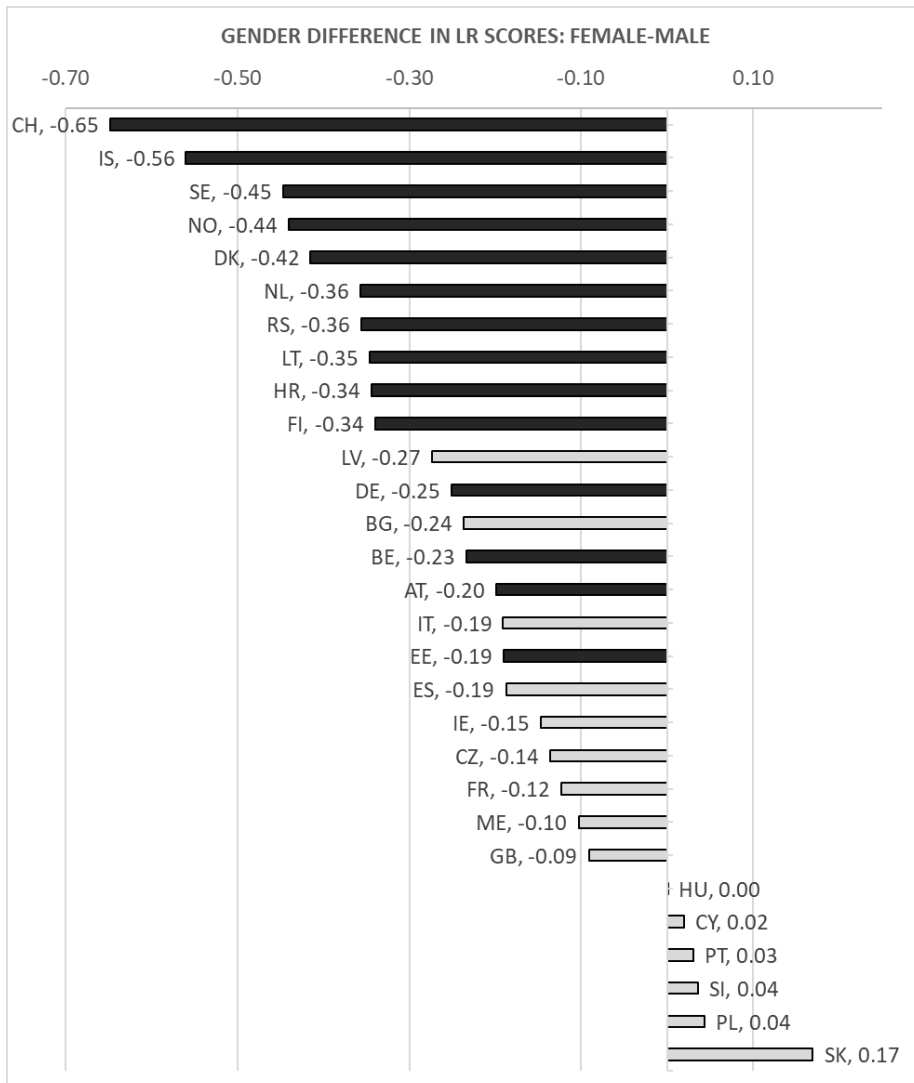


*Note.* Data source: ESS 9.3 data; weighted by *pspwght*.

By examining Figure 3, we can also see that on the single-country level, the magnitude of the gap previously observed on the aggregate sample (around .2 points) is typically below the magnitude that the difference needs to achieve to be statistically significant in a typically sized country sample. Thus, the largest difference is observed in the Swiss sample, and it is three times the size of the 'European-level' difference between the gender averages.

**Figure 3**

*Gender differences in left-right scores by country*



*Note.* Dark-colored bars represent statistically significant differences ( $p < .05$ ); Data source: ESS 9.3 data; weighted by *pspwght*.

The conclusion of this part of the analysis is that the 'modern gender gap' in ideology that seems to characterize Europeans is observed in about half of the included countries (the gap is statistically significant in 14 out of 29 cases). Yet, in not a single case, it appeared that men, on average, score more left-wing compared to women. It seems that if there is some ideological gender gap, it is as described under the label of the 'modern gender gap' – women are slightly more left-leaning. Nonetheless, it should be remembered that, within the ESS9 dataset, European countries without any gender gap in ideology, whether modern or ancient, are equally frequent.

### Distribution of the left-right scale in comparative context

Thus far, we have focused on differences in averages. But what is happening behind the average scores? As indicated in probably every statistical introduction textbook, similar averages can mask large differences in distributions.

The distribution of responses to the left-right self-placement scale by gender in the entire ESS sample (data from 29 countries) is shown in Figure 4. We can notice that the distribution is heavily centered – the single most popular answer on this 11-point scale is the mid-scale value of 5 –similarly among both genders. In fact, around 33% of the entire sample chose this response. The least popular responses are 1 and 9. Thus, the left-right centrism observed more than three decades ago (Knutsen, 1998) is still a notable feature of the European public.

Figure 4

*Distribution of left-right self-placement responses among men and women*



*Note.* Data source: ESS 9.3 data; weighted by *wcsp*.

Nonetheless, it should be noted that women are even more centrist compared to men (see the peak on the middle scale point at 5), while men are slightly more frequent in the moderate right (responses 7, 8, and 6). On the left from the scale midpoint, the distributions are virtually identical.

So, are the European women more leftist? Yes, if we focus on the differences in the average scores. If we look at the distribution of the responses, women appear to be less rightist and more centrist compared to men, at least using this "eyeballing method". Whether this is equivalent to being 'more leftist' is a matter of interpretation. However, the mid-scale responses on the left-right scale could mean ideologically 'neutral' or perhaps undecided responses (e.g., Knutsen, 1998). In any case, whatever the meaning of this may be, the point is that the conclusion "women are more leftist" may be misleading, as there are no relatively more women on the left side of the ideological dimension.

So, perhaps the more appropriate conclusion might be that women are not more left-wing but are more centrist and less rightist compared to European men. This distinction is theoretically important – especially if we take into account the directional model of voting, which states that it is the position relative to the scale center (neutral position) that matters, rather than the ideological closeness in absolute terms (e.g., Macdonald & Rabinowitz, 1993; Macdonald et al., 1995; Rabinowitz & Macdonald, 1989; Tiemann, 2022).

Hence, the modern gender gap, based on the difference in averages, might be politically inconsequential if it reflects differences in ideological centrism, especially if interpreted in a directional sense – as ideological indifference. From the directional perspective, those in the ideological scale center are not highly motivated to support any side in the electoral struggle. Thus, it may actually be the men on the moderate right that determine the relative power of the two political camps (left and right).

Note that Figure 4 shows just the so-called valid responses. In the aggregate sample, 11.29% of respondents answered 'Don't know' to the question about left-right self-placement. It is the most numerous category after the scale middle point. Scholz & Zuell (2016) showed that including an explicit option for respondents to express no opinion concerning their left-right positioning can improve the quality of the left-right scale. Our results show that there are gender differences in this domain: in the overall sample, female respondents are indeed more frequently represented in the DKN category compared to men. While in the overall sample, there are 51.4% of women, in the left-right DKN response category, 59.5% of cases are female (the difference is highly statistically significant ( $\chi^2(1, N = 42089) 134.26, p < .001$ ; weighted by the combined weight for equal country representation *wcpsp*).

The size of the difference is particularly large in Germany (74.7% of the DKN responses belong to female respondents), Denmark (69% of the DKN category is female), and in British and Dutch samples (in both cases around 68% of the category are female respondents). The smallest difference is observed in Latvia and Slovenia (53% and 54% of females in the DKN category, respectively). Only in the Norwegian sample male respondents are relatively more numerous

---

among those who didn't know what to respond to the LR scale (nearly 60% of respondents in this category are of male gender). However, it should be kept in mind that in single-country analyses, the number of cases in the DKN category can be rather low, so not all observed differences are statistically significant. Still, given the rather uniform tendency, the overall picture is clear - European women are relatively more frequently choosing the DNK category when responding to the LR scale question.

While the analysis of the "Don't know" responses is not directly relevant to our point about certain gender differences in distributions of responses to the left-right scale, it is indirectly relevant. It is part of the responses to that scale and may be relevant for further research on the meaning of the midpoint responses and help answer the question of to what extent those responses also perhaps reflect uncertainty and lack of opinion.

### Country-level analysis

To what extent the described difference in ideological centrism is observable within individual countries? In order to examine to what extent women tend to be more frequently on the left wing or rather on the scale midpoint, we collapsed the left-right scale into three categories. The left-wing category is represented by merging answers on the left side from the midpoint (scores 0-4). The right-wing category is defined by collapsing responses to the right side of the midpoint (scores 6-10). This categorization would fit the directional conception of political preferences, as it emphasizes the side of the political divide compared to the middle or neutral position.

The relatively left-wing position of average women's score may reflect their relative concentration on the left compared to men, but also on the center of the scale if men are more present on the right side. If in most cases there is no difference between genders in their concentration on the scale midpoint, that would mean that the difference in averages is due to women being more present in the left wing.

Figure 5 shows the gender differences (men's percentage minus females' percentage) in their relative presence on the left-wing, right-wing, and

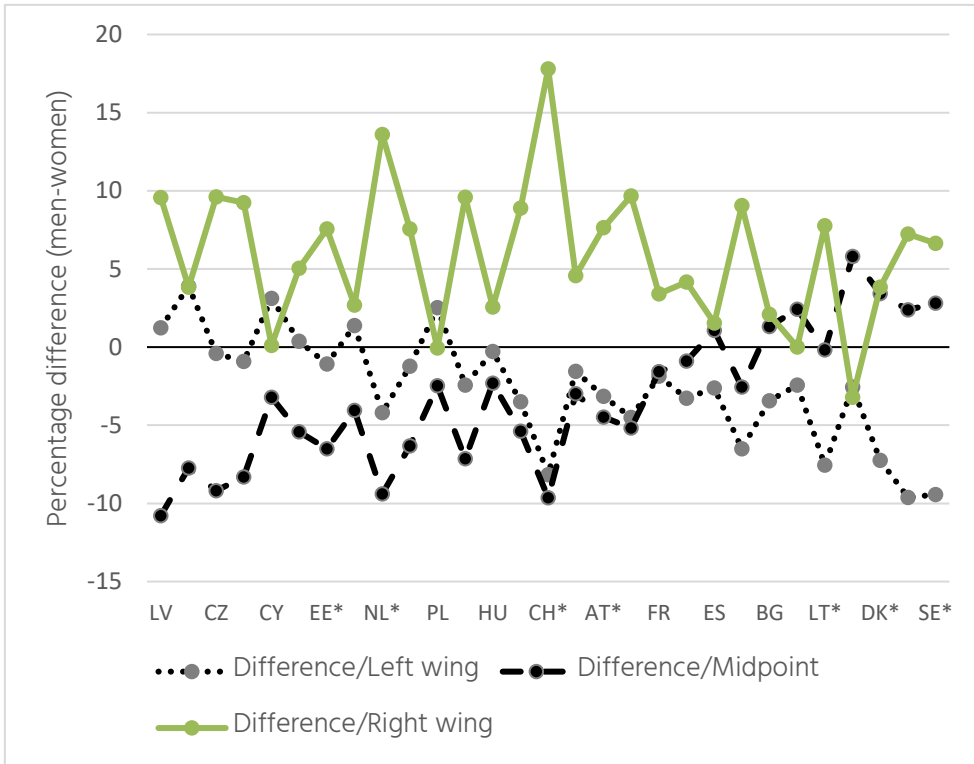


---

scale midpoint across different ESS 9 countries. Positive values on the vertical axis mean that males are more frequent in that position. For instance, looking at the first country case (LV-Latvia), we can read from the graph that men are more frequently on the right wing (nearly ten percentage points difference), there is little difference in their relative frequency on the left-wing side, while women are more concentrated on the scale midpoint (nearly 11 percentage points difference; minus sign denotes that women are relatively more present in that category). The detailed table on which the graph is based is included in the Supplementary materials (see Table 2a and Table 2b).

Figure 5

*Gender differences in the relative frequency on the left-wing, right-wing, and midpoint of the left-right scale*



*Note.* Points represent the difference in percentage points between men and women on the left wing (scores 0-4), right wing (scores 6-10), and the midpoint of the left-right scale per country. The asterisk denotes countries where significant difference in averages between genders is observed (see Table 1); Data source: ESS 9.3 data; weighted by ESS weight *pspwght*.

By examining this graph, we can make several observations. First, women are more frequent on the scale midpoint – in 20 cases, the difference is larger than 1% point. The largest differences are in Latvia, Switzerland, and the Netherlands - nearly ten percentage point difference. In Latvia, nearly 33% of

men chose the middle point, while nearly 44% of women chose the same position. On the other side, men are relatively more frequent in the scale midpoint in 7 cases, but the difference is larger than three percentage points in just 2 cases (Slovakia – 5.8 percentage points, and Denmark – 3.4 percentage points). Among women, the difference is larger than three percentage points in 15 cases.

Men are relatively more frequently positioned on the right-wing side (scores 6-11) of the ideological scale in 25 cases (the difference of at least 1 percent points). This difference is the largest in Switzerland – nearly 18 percentage points, the Netherlands – 13.6 percentage points, Latvia, Czech Republic, Belgium, etc. In only a single case, women are more frequent on the right wing (Slovakia, the difference being 3.33 percentage points).

Men are relatively more frequent on the left side of the scale in 5 cases (the difference larger than one percentage point, the largest being 3.9). Women, on the other side, in 20 cases are more concentrated on the left wing. Women seem particularly leftist (compared to men) in north-western countries – Sweden, Iceland, Denmark, and Lithuania, Norway, and also Switzerland.<sup>6</sup>

On the horizontal axis, the country abbreviations are marked with an asterisk if, in that particular case, we observed statistically significant gender differences in the mean scores on the left-right scale. We can observe now that in some cases, this difference is mainly due to women indeed being more frequently on the left wing (while men are on the right wing). The best examples are Denmark, Iceland, and Sweden. In other cases, both women's relative prevalence on the left wing and on the midpoint contributed to the differences in averages. Here, the examples are Switzerland, Finland, Norway, and Serbia. However, there are also cases where the females' left-leaning is mainly due to

---

<sup>6</sup> Table 2b (In Supplementary materials) shows the results of the Pearson Chi-square tests of the association between gender and the three-category left-wing, right-wing, and centrist placements. This test is non-directional - it just shows whether the frequency distribution statistically differs between genders, not if it is due to men or women being more leftist or rightist. However, by examining the frequency distributions, we can obtain a rather clear image of the associations.

---

them being relatively more concentrated in the middle of the scale. The representative cases are Belgium, Estonia, Croatia, and Germany.

## Discussion

In this paper, we set out to investigate if the effects of "ideological realignment" (Dassonneville, 2020; Norrander & Wilcox, 2008), i.e., the tendency for women to hold somewhat more left-wing or liberal ideological positions and electoral preferences (Giger, 2009) compared to men, are still observable in the more recent data from Europe. For this purpose, we examined differences between average scores of men and women on the left-right self-placement scale, both analyzing the aggregate 'European' ESS sample as well as 29 individual country samples.

We also wanted to provide a 'higher resolution' picture of the gender differences (or similarities) than is possible by simply focusing on differences in the averages. Therefore, we compared distributions of the left-right scale among the two genders.

While the literature, based on comparing the averages, suggested that women are more liberal or left-wing oriented compared to men, we thought that this conclusion was premature because the data is not analyzed sufficiently in-depth. In particular, we wondered if the proportion of respondents (of both genders) located at the center of the scale might be relevant. Virtually all studies show that the left-right scale distribution is heavily centered (e.g., Knutsen, 1998; Dassonneville, 2020). Thus, small differences in the distribution of men and women in the center and wings of the scale might be relevant.

Literature suggests several interpretations of ideological centrism: genuine centrist location, lack of opinion, cognitive limitation, and irrelevance. The role of the ideological center has a particularly important role in the directional model of political preferences (e.g., Macdonald & Rabinowitz, 1993; Macdonald et al., 1995; Rabinowitz & Macdonald, 1989; Tiemann, 2022). In this view, what matters is the *side* of the political divide on which a person is, while the position in the center is seen as ideologically neutral or undecided rather than 'centrist'. Moreover, the evidence shows that political parties are usually

not located at the ideological center (despite the 'median voter theorem' and its implications). Hatem (2021, p. 84, Figure 3.1), for instance, on the basis of Chess<sup>7</sup> data, shows that European political parties are located more on moderate left and right than strictly in the center. Also in line with the directional perspective, Zur concludes that "Empirical evidence suggests that most parties in Western Europe do not take centrist policy positions, despite the centripetal force of the voter distribution." (2021, p. 1755).

A quarter of a century ago, Knutsen (1998) noticed increasing centrism among the European publics. He observed that "The centrist increase is not concentrated among those with little political involvement, but is somewhat larger among those with less education and women." (Knutsen, 1998, p. 292). Although it may appear that this implies that centrism reflects not ideology but a lack of opinion or interest, Knutsen wrote, somewhat contrary to the directional view, that "We are then inclined to conclude that the centrist tendency is genuine." (Knutsen, 1998, p. 314). Giger (2009) also finds that centrism is not just a superficial subjective ideology, but also has repercussions on voting behavior. Yet, more recently, Hatem concludes that "centrists are shown to be less sensitive to ideology than other voters when casting their ballots" (2021, p. ix).

Thus, although it is not entirely clear how to interpret ideological centrism, there is some support for both the genuine ideological position and the lack of opinion. However, one implication is certain: it is important to take ideological centrism into account when trying to understand the modern ideological gender gap.

The present results provide some support for the conclusion that women tend to lean more towards the left wing. Not in a single country did men appear more leftist, on average, than women. Overall, men appeared more right-wing-oriented in most European countries. This is evidenced not only by the

---

<sup>7</sup> The Chapel Hill expert surveys estimate party positioning on ideology and various policy issues for national parties in a variety of European countries (<https://www.chesdata.eu/>).

---

differences in the mean scores but also in their relatively higher concentration on the right-wing scale points compared to women.

However, the picture is more complex when it comes to the female gender. Their average position on the left compared to men reflects two underlying characteristics. One is that women are indeed relatively more frequent on the left wing compared to men, but not to the degree to completely account for the differences in the averages. The other one is that women, more often than men, tend to choose the scale midpoint.

This distinction is theoretically important because it may reflect different underlying processes. One may be the real (conscious) ideological shift of women in the leftward direction. And this is where almost all theories of the ideological gender gap claim to be relevant. However, being more left-wing because of the greater tendency to choose the scale midpoint may reflect ideological centrism, ideological neutrality (whatever that might be), but also a lack of opinion.

Explaining the tendency to choose a scale midpoint requires a somewhat broader explanatory model than when dealing with the modern gender gap. In addition to, for instance, examining the factors that may account for higher leftism among women (e.g., value orientations), researchers need to elaborate models that would account for higher centrism among women. Here, important factors might be political interest, competence, efficacy, issue salience, and so on.

Future research should investigate the obvious question stemming from the presented findings: what accounts for the observed ideological centrism of women? This means examining the association of ideological 'centrism' and political sophistication and interest on the one side and with political attitudes and policy preferences on the other. Of course, it remains important to continue descriptive research on gender differences and similarities in left-right ideology in order to be able to ask really relevant questions in explanatory studies.

Another topic that future research should focus on concerns cross-country differences. As in previous studies, this paper documented large differences between countries, both in the averages and in the distribution of

the left-right scale. Clearly, female leftism is more visible in north-western Europe and relatively rare in Southern and Eastern Europe, similar to Abendschön & Steinmetz (2014). Future research should study the regional differences and the role of contextual, macro-level factors (e.g., Abendschön & Steinmetz, 2014).

Specifically, factors such as education, religiosity, and labor market participation, known to impact women's ideological positions, may not have the same effect across various countries. In the early 1990s, Inglehart and Norris (2000) showed that socio-structural and attitudinal factors have a unique contribution to voting preferences in advanced industrialized, postcommunist, and developing societies. While the economic progress of postcommunist countries has been relatively rapid, the pace of cultural and attitudinal shifts, which also play a significant role in voting preferences, has been considerably slower (Abendschön & Steinmetz, 2014). And those broad cultural and attitudinal factors could vary significantly by country. Furthermore, it may simply be that the meaning of the left and right varies between countries too much to make the results based on the left-right scale generalizable (Zuelli & Scholz, 2019).

### *Conflict of Interest*

We have no conflicts of interest to disclose.

### *Data availability statement*

Data used in this paper are available upon a reasonable request.

## References

- Abendschön, S. & Steinmetz, S. (2014). The gender gap in voting revisited: Women's party preferences in a European context. *Social Politics*, 21(2), 315–344. <https://doi.org/10.1093/sp/jxu009>
- Baxter, S. & Lansing, M. (1983). *Women and politics*. Ann Arbor: University of Michigan Press.
- Burden, B. C. (2008). The Social Roots of the Partisan Gender Gap. *Public Opinion Quarterly*, 72(1), 55–75. <https://doi.org/10.1093/poq/nfm056>

- Dassonneville, R. (2020). Change and continuity in the ideological gender gap a longitudinal analysis of left-right self-placement in OECD countries. *European Journal of Political Research*, 60(1), 225-238. <https://doi.org/10.1111/1475-6765.12384>
- ESS Round 9: European Social Survey Round 9 Data (2018). Data file edition 3.1. NSD - Norwegian Centre for Research Data, Norway – Data Archive and distributor of ESS data for ESS ERIC. <http://dx.doi.org/10.21338/NSD-ESS9-2018>.
- Giger, N. (2009). Towards a modern gender gap in Europe?: A comparative analysis of voting behavior in 12 countries. *The Social Science Journal*, 46(3), 474-492. <https://doi.org/10.1016/j.soscij.2009.03.002>
- Hatem, D. (2021). *The vital centre, the middle of nowhere, or something in-between: A study of political centrism in Western democracies*. Doctoral dissertation, University of Oxford.
- Inglehart, R. & Norris, P. (2000). The developmental theory of the gender gap: Women's and men's voting behavior in global perspective. *International Political Science Review*, 21(4), 441–463. <https://doi.org/10.1177/0192512100214007>
- Inglehart, R. & Norris, P. (2003). *Rising tide. Gender equality and cultural change*. Cambridge: Cambridge University Press.
- Iversen, T. & Rosenbluth, F. (2006). The Political Economy of Gender: Explaining Cross-National Variation in the Gender Division of Labor and the Gender Voting Gap. *American Journal of Political Science*, 50(1), 1–19. <https://doi.org/10.1111/j.1540-5907.2006.00166.x>
- Knutsen, O. (1998). Europeans move towards the center: a comparative longitudinal study of left–right self-placement in Western Europe. *International Journal of Public Opinion Research*, 10(4), 292-316.
- Kroh, M. (2007). Measuring left–right political orientation: The choice of response format. *Public Opinion Quarterly*, 71(2), 204-220. <https://doi.org/10.1093/poq/nfm009>
- Lippa, R. A. (2010). Sex differences in personality traits and gender-related occupational preferences across 53 nations: Testing evolutionary and social-environmental theories. *Archives of Sexual Behavior*, 39(3), 619–636. <https://doi.org/10.1007/s10508-008-9380-7>



- Macdonald, S. E. & Rabinowitz, G. (1993). Direction and uncertainty in a model of issue voting. *Journal of Theoretical Politics*, 5(1), 61-87.  
<https://doi.org/10.1177/0951692893005001003>
- Macdonald, S. E., Rabinowitz, G. & Listhaug, O. (1995). Political sophistication and models of issue voting. *British Journal of Political Science*, 25(4), 453-483.
- Manza, J. & Brooks, C. (1998). The gender gap in U.S. presidential elections: When? Why? Implications? *American Journal of Sociology*, 102(5), 1235–1266.  
<https://doi.org/10.1086/231352>
- Norrander, B. & Wilcox, C. (2008). The gender gap in ideology. *Political Behavior*, 30(4), 503-523. <https://doi.org/10.1007/s11109-008-9061-1>
- Rabinowitz, G. & Macdonald, S.E. (1989). A directional theory of issue voting. *American Political Science Review*, 83(1), 93-121. <https://doi.org/10.2307/1956436>
- Rodon, T. (2015). Do all roads lead to the center? The unresolved dilemma of centrist self-placement. *International Journal of Public Opinion Research*, 27(2), 177-196.  
<https://doi.org/10.1093/ijpor/edu028>
- Rodon, T. (2021). Caught in the middle? How voters react to spatial indifference. *Electoral Studies*, 73, 102385. <https://doi.org/10.1016/j.electstud.2021.102385>
- Scholz, E., & Zuell, C. (2016). Methodological aspects of central left-right scale placement in a cross-national perspective. *Bulletin of Sociological Methodology/Bulletin de Méthodologie Sociologique*, 132(1), 44-57.  
<https://doi.org/10.1177/0759106316662588>
- Shapiro, R. Y. & Mahajan, H. (1986). Gender differences in policy preferences. A summary of trends from the 1960s to the 1980s. *Public Opinion Quarterly*, 50(1), 42–61.  
<https://doi.org/10.1086/268958>
- Sidanius, J., Pratto, F. & Brief, D. (1995). Group dominance and the political psychology of gender: A cross-cultural comparison. *Political Psychology*, 16(2), 381 – 396.  
<https://doi.org/10.2307/3791836>
- Tiemann, G. (2022). Conditions of proximity and directional voting: Voter sophistication, political information, and party identification. *Electoral Studies*, 75, 102436. <https://doi.org/10.1016/j.electstud.2021.102436>
- Zuell, C. & Scholz, E. (2019). Construct equivalence of left-right scale placement in a cross-national perspective. *International Journal of Sociology*, 49(1), 77-95.  
<https://doi.org/10.1080/00207659.2018.1560982>

---

Zur, R. (2021). The multidimensional disadvantages of centrist parties in Western Europe. *Political Behavior*, 43(4), 1755-1777. <https://doi.org/10.1007/s11109-020-09671-w>

## Supplementary materials

**Table 1**

*Mean scores on the left-right self-placement scale in different European countries*

Country	Male	Female	Difference	<i>t</i>	<i>p</i>
CH	5.41	4.76	0.65	6.20	0.001
IS	5.10	4.54	0.56	3.75	0.001
SE	5.41	4.96	0.45	3.75	0.001
NO	5.26	4.82	0.44	3.37	0.001
DK	5.24	4.83	0.41	3.51	0.001
NL	5.35	4.99	0.36	3.61	0.001
RS	4.63	4.27	0.36	2.50	0.013
LT	5.10	4.75	0.35	2.52	0.012
HR	5.02	4.68	0.34	2.68	0.007
FI	5.78	5.44	0.34	3.34	0.001
LV	5.99	5.72	0.27	1.57	0.117
DE	4.53	4.28	0.25	3.06	0.002
BG	5.60	5.36	0.24	1.79	0.074
BE	5.08	4.85	0.23	2.42	0.016
AT	4.72	4.52	0.20	2.43	0.015
IT	5.37	5.18	0.19	1.82	0.069
EE	5.48	5.29	0.19	2.12	0.034
ES	4.50	4.31	0.19	1.59	0.112
IE	5.02	4.87	0.15	1.77	0.078
CZ	5.57	5.44	0.14	1.52	0.129
FR	4.90	4.78	0.12	1.19	0.233

---

ME	4.44	4.34	0.10	.50	0.620
GB	4.92	4.83	0.09	1.05	0.295
HU	5.42	5.42	-0.001	-.01	0.996
CY	5.43	5.45	-0.02	-.09	0.930
PT	4.88	4.91	-0.03	-.21	0.836
SI	4.87	4.90	-0.03	-.24	0.811
PL	5.74	5.78	-0.04	-.31	0.760
SK	5.14	5.31	-0.17	-1.08	0.280

---

*Note.* Weighted by *pspwght*; data source: ESS 9.3 dataset.

**Table 2a***Distribution of left-wing, right-wing, and centrist placements on the left-right scale*

Country	Left-right self-placement - Males			Left-right self-placement – Females			Difference between M and F percentages (Male-Female)		
	Left wing	Middle point	Right wing	Left wing	Middle point	Right wing	Left wing	Middle point	Right wing
LV	14.7	32.9	52.4	13.4	43.7	42.9	1.2	-10.8	9.6
GB	34.5	35.3	30.2	30.6	43.0	26.4	3.9	-7.7	3.8
CZ	25.1	23.9	51.0	25.5	33.1	41.4	-0.4	-9.2	9.6
BE	31.9	30.7	37.4	32.8	39.0	28.2	-0.9	-8.3	9.2
CY	22.7	38.2	39.1	19.6	41.4	39.0	3.1	-3.2	0.1
IE	31.2	36.8	32.0	30.8	42.3	26.9	0.4	-5.4	5.0
EE	18.3	43.5	38.1	19.4	50.0	30.6	-1.1	-6.5	7.6
SI	33.8	38.0	28.2	32.4	42.1	25.6	1.4	-4.0	2.7
NL	29.5	23.6	46.9	33.7	33.0	33.3	-4.2	-9.4	13.6
HR	34.9	30.7	34.4	36.1	37.0	26.8	-1.2	-6.3	7.6
PL	25.1	29.7	45.3	22.6	32.1	45.3	2.5	-2.5	-0.1
DE	41.3	34.2	24.5	43.7	41.4	14.9	-2.4	-7.2	9.6
HU	28.3	27.7	44.0	28.6	30.0	41.5	-0.3	-2.3	2.6
RS	37.4	37.6	25.0	40.9	43.0	16.1	-3.5	-5.4	8.9
CH	27.4	26.8	45.8	35.5	36.4	28.1	-8.2	-9.7	17.8
ME	41.0	31.2	27.7	42.6	34.2	23.2	-1.6	-3.0	4.6
AT	37.0	33.5	29.5	40.2	38.0	21.9	-3.2	-4.5	7.7
FI	22.7	26.5	50.8	27.2	31.7	41.1	-4.5	-5.2	9.7
FR	34.0	33.7	32.3	35.9	35.3	28.9	-1.8	-1.6	3.4
IT	31.6	24.2	44.2	34.9	25.1	40.1	-3.3	-0.9	4.2
ES	47.5	25.6	27.0	50.1	24.5	25.4	-2.6	1.1	1.5
NO	36.8	19.6	43.6	43.3	22.2	34.5	-6.5	-2.6	9.1

BG	24.4	31.2	44.4	27.8	29.9	42.3	-3.4	1.3	2.1
PT	33.8	36.7	29.5	36.3	34.3	29.5	-2.4	2.4	0.0
LT	27.9	39.0	33.2	35.4	39.2	25.4	-7.6	-0.2	7.8
SK	29.2	35.8	35.1	31.8	30.0	38.3	-2.6	5.8	-3.2
DK	34.4	25.0	40.6	41.7	21.6	36.8	-7.2	3.4	3.8
IS	34.5	28.6	36.9	44.1	26.2	29.7	-9.6	2.4	7.2
SE	30.6	21.7	47.7	40.0	18.9	41.0	-9.4	2.8	6.6
Average	31.6	30.7	37.6	34.0	34.6	31.4	-2.6	-3.3	5.9

*Note.* Table entries are percentages of responses within each election study. For statistical significance see Table 2b. Weighted by *pspwght*. Data source: ESS 9.3 dataset.

**Table 2b**

*Results of Pearson Chi-square test of the association between gender and political self-placement (left-wing, right-wing, and centrist placements)*

Country	$\chi^2$	<i>df</i>	<i>p</i>	<i>N</i>
LV	8.36	2	.015*	657
GB	12.51	2	.002**	2004
CZ	26.98	2	.000***	2157
BE	19.39	2	.000***	1684
CY	1.04	2	.594	541
IE	7.75	2	.021*	1919
EE	11.44	2	.003**	1728
SI	1.97	2	.373	1069
NL	31.90	2	.000***	1543
HR	12.41	2	.002**	1606
PL	1.41	2	.495	1231

---

DE	34.41	2	.000***	2234
HU	1.23	2	.540	1400
RS	15.13	2	.001**	1294
CH	48.69	2	.000***	1420
ME	2.38	2	.304	779
AT	17.42	2	.000***	2280
FI	15.88	2	.000***	1677
FR	2.56	2	.278	1812
IT	3.79	2	.151	1983
ES	1.00	2	.605	1444
NO	11.51	2	.003**	1357
BG	2.04	2	.361	1343
PT	.74	2	.690	941
LT	11.71	2	.003**	1240
SK	3.69	2	.158	961
DK	8.40	2	.015*	1497
IS	8.34	2	.015*	808
SE	14.40	2	.001***	1480

---

*Note.* Table entries correspond to frequency tables on which the results in Table 2a are based. Weighted by *pspwght*. Data source: ESS 9.3 dataset.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .







Research Article

# Perception of intergroup threat of Croatian receiving community in the context of integration of refugees

Jana Kiralj Lacković<sup>1</sup>  , Dean Ajduković<sup>1</sup> 

<sup>1</sup>*Department of Psychology, Faculty of Humanities and Social Sciences, University of Zagreb, Croatia*

## ABSTRACT

Integration of refugees and receiving community members (RCMs) has been an expanding topic in research on group dynamics in the past fifteen years. A higher level of integration is indicated by lower levels of the perception of intergroup threat felt between refugees and RCMs. The Integrated Threat theory defines two types of threat – realistic and symbolic. Realistic relates to resources and interests such as socio-economic and physical safety, while symbolic relates to cultural and social elements such as norms, values, and way of life. The goal of this study is to explore whether some socio-demographic and socio-economic characteristics and socio-psychological indicators of integration predict the levels of realistic and symbolic threat perception in Croatian RCMs.

A sample of 600 RCMs participated in the study, collected using the random walk technique. Data were analysed using SEM, and the two final models showed a good fit. More than a fifth of the variance of realistic threat and more than a third of the variance of symbolic threat was explained by the models. RCMs with lower levels of education, right-wing orientation, lower household income and less support for the rights of refugees showed higher levels of realistic threat. Higher levels of symbolic threat were shown by older RCMs, right-wing oriented, those who perceived refugees to be a part of the society in Croatia to a lesser degree, and showed less support for the rights of refugees. Political orientation and support for

the rights of refugees are particularly highlighted as predictors of both types of threat.

*Keywords:* integration, refugees, receiving community, threat, attitudes

---

UDK: 316.64:2-45(497.5)

DOI: 10.19090/pp.v17i4.2528

Received: 28.01.2024.

Revised: 10.08.2024.

Accepted: 29.08.2024.



Copyright © 2024 The Author(s).

This is an open access article distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

---

✉ Corresponding author email: [jkiralj2@gmail.com](mailto:jkiralj2@gmail.com)

## Introduction

Integration of receiving communities and refugees is a dynamic and two-way process of mutual accommodation, multidimensional and with emphasis on responsibilities and challenges in both groups (European Commission, 2005). It is one of the forms of acculturation which is a process by which individuals learn about the norms characteristic of the other culture (Hogg & Vaughan, 2005). Integration is characterised by the lowest levels of unpleasant socio-emotional consequences in comparison to other acculturation forms: assimilation, separation, and marginalisation (Berry et al., 1986; 1987). Within these three acculturation forms the responsibility for expected adaptation in behaviour and/or social norms and values lies exclusively on the newcomer group, while the receiving community remains passive. In contrast, integration presumes active and mutual accommodation of both groups. This results, theoretically, in boosting social harmony and stability, with the retention of respective social identities and cultural practices, and with the potential of expanding the social identity to include the members of both groups (Hogg & Vaughan, 2005). Such social re-categorisation is one of the dimensions of integration, alongside the socio-economic and legal aspects of refugee integration, as well as facilitating factors such as language acquisition (Ager & Strang, 2008; Ndofor-Tah et al., 2019). It depends on both social and psychological factors and can be defined as a socio-psychological dimension of integration (Kiralj Lacković et al., 2023).

Throughout integration, the social and psychological well-being of the receiving community members (RCMs) and refugees (REFs) can be monitored by the indicators of integration - measures of constructs that are relevant in the study of intergroup relations in general, and in the context of integration in particular. These include attitudes, contact, social distance, social networks, discrimination, support for refugee rights in the receiving country, perception of intergroup threat, behavioural intentions, etc. (Kiralj Lacković et al., 2023). For each of these indicators, we can expect a direction and strength indicating a level of integration of the two groups. The perception of intergroup threat (sometimes also referred to as 'perception of threat' and 'threat perception') is

---

an uncomfortable and socially determined combination of emotions and reasoning that emerges in the context of intergroup interactions. Scholars have been trying to understand threat perception since the 1960s, starting with the Realistic group conflict theory (Sherif & Sherif, 1969), across Symbolic racism theory (Kinder & Sears, 1981), until the probably most influential theory of threat perception, the Integrated Threat Theory (ITT; Stephan & Stephan, 2000). Combining the premises of the former two theories, authors of ITT postulated that intergroup attitudes can be influenced by the perception of a struggle for resources and the difference in core values at the same time. Recently revised ITT defines two types of threat perception: realistic and symbolic (Stephan & Stephan, 2017). *Perception of realistic threat* is a sense that the members of the other group have the potential to harm one's palpable or impalpable interests such as access to socio-economic resources or political influence, or harm them physically. *Perception of symbolic threat* is a sense that the other group can harm one's system of values, norms, or way of life. In the context of integration, the perception of realistic threat is related primarily to the fear of unjust re-division of socio-economic resources and physical danger the other group might cause, while the perception of symbolic threat is related to the idea that other's different cultural values are opposed and dangerous to one's own.

The ITT suggests that there are several causes and effects of threat perception. Personal characteristics, attitudes and beliefs, past experiences, intercultural (intergroup) contact, and situational and societal factors are thought to be the antecedents of the threat perception which in turn impacts emotions, cognition, and behaviours (Stephan & Stephan, 2017). In other words, the ITT proposes that threat perception is related to the individual's interpretation of observable, i.e. social context and interactions, as well as the unobservable – their inner psychological processes.

Some studies considered personal characteristics influencing the threat perception of RCMs about asylum seekers and REFs. Of socio-demographic characteristics, age and level of education were negatively related to perceived threat (Hartley & Pedersen, 2015; Sunhan et al., 2012). Personality traits and cognitive tendencies were also related to the threat perception, such as right-

wing authoritarianism, conservatism, social dominance orientation, exclusivist belief systems, and political attitudes (Matthews & Levin, 2012; Newman et al., 2012). Along the same lines, those RCMs who were right-wing-oriented expressed more anxiety related to the “refugee crisis” than left-wing-oriented ones (Van Prooijen et al., 2018). Additionally, religious fundamentalism of RCMs was a predictor of the perception of symbolic threat related to REFs (Kang, 2018). These studies suggest that age, level of education, political orientation, and strong religious affiliation could help explain the threat RCMs perceive about REFs. With regards to attitudes and beliefs, intergroup contact, intergroup identification, differences in social status, and negative stereotypes were found to be significant predictors of intergroup threat (Aberson, 2019; Aberson & Gaffney, 2008).

The ITT suggests that the history of prior relations between the members of two cultures influences the anticipated valence of future interactions (Stephan & Stephan, 2017) which is in line with the contact hypothesis stating that intergroup contact can influence prejudice towards members of the other group (Allport, 1954). The evidence supporting this hypothesis is systematic and shows that intergroup contact reduces prejudice most effectively when it is deep, meaningful, voluntary, and pleasant (Pettigrew & Tropp, 2006; Pettigrew et al., 2011). Meta-analytic studies find that contact is associated with a decrease in prejudice and an increase in positivity towards the other group in various contexts (Van Assche et al., 2023). The same authors found that the effects of contact on prejudice are at least equally strong for persons experiencing low vs. high threat (Van Assche et al., 2023). Intergroup contact can be viewed in two dimensions: how often it occurs (frequency or quantity) and how it is perceived (valence or quality). The quantity of contact did not predict prejudice in RCMs towards asylum seekers, but the quality did (Barlow et al., 2012; Healy et al., 2017; Turoy et al., 2013). The interaction between frequency and valence was also significant, showing that frequent interaction with the asylum seekers and evaluating such experiences as pleasant had the strongest impact on reducing prejudice (Barlow et al., 2012). Interestingly, the RCMs do not have to interact with REFs directly to experience a prejudice

reduction – both personal and extended contact were negatively related to prejudice, discrimination, and negative group emotions towards REFs (Geschke, 2007).

The research focused on the external influences related to threat perception has shown that societal factors such as power relations could play an important role in its formation. Groups with higher social power were more likely to strongly react when feeling threatened, trying to prevent the loss of their power of influence (Corenblum & Stephan, 2001). This was further supported by evidence suggesting that the relation between threat perception and intergroup attitudes is stronger for groups with higher social power (Riek et al., 2006). In the migration context, RCMs are a group with a stronger social power in comparison to REFs. Perception of realistic threat also depends on the perceived motivation for migration of migrants. Threat was found to be higher in RCMs who were responding to questions about unauthorised immigrants versus the authorised ones (Murray & Marx, 2013). In another study, RCMs expressed higher levels of threat when asked to think about asylum seekers, as opposed to thinking about REFs (Hartley & Pedersen, 2015). They also dehumanised immigrants more than refugees (DeVaul-Fetters, 2014). Another factor that impacts threat perception is the perceived size of the other group, most probably due to the idea that larger groups have more influence and could make a greater impact (McLaren, 2003).

### Croatian context

Croatia is a country with very limited experience of inward migration. During the migration from Syria and surrounding countries towards the north-west of Europe in 2015 and 2016, Croatia was primarily a transit country and a temporary location for REFs, with the current population of REFs mostly living in Zagreb, Sisak and Karlovac (Ministry of Internal Affairs, 2022). Before being granted the legal status of a refugee (person under international protection), they are accommodated in shared housing in reception centres. Upon receiving refugee status, they relocate to state-owned housing or privately owned housing with rent covered by the state for a set period. The number of REFs in

Croatia is very small – a total of 1,085 persons were granted international protection between 2006 and 2023, which includes REFs from Syria as well as other countries (Ministry of Internal Affairs, 2023). The integration process rests on the legal foundations of the EU and Croatia, further detailed in the local action plans (Office for Human Rights and Rights of Minorities, 2017).

Several studies explored the threat perception of RCMs from REFs, migrants, and asylum seekers in Croatia. At the end of 2015 and the start of 2016, RCMs expressed mixed feelings about migrants (Henjak, 2018). Their positive attitudes included viewing migration as a way to resolve demographic and workforce problems, and those expressing a positive stance supported an open society. Negative attitudes included perceiving migrants as a cultural and economic threat and were backed up by the preference to close the borders and fence out the source of the threat. In another study, asylum seekers were seen as a security and economic threat, putting more emphasis on the realistic threat (Gregurović et al., 2016). Croatian RCMs on average expressed neutral attitudes towards persons granted asylum and REFs, but also showed mid-levels of realistic threat and a bit stronger symbolic threat (Ajduković et al., 2019; Kiralj Lacković et al., 2023). RCMs also related the arrival of REFs from Syria to the increased competition in the job market and believed that they should not be helped by the government “too much” as there is “quite a lot of [Croatian] population that needs to be taken care of” (Kiralj & Ajduković, 2021; pp. 673). Some RCMs strongly believed that refugees should only practise their religion in their own homes and personal time, or pay a higher tax due to their religious affiliation (Kiralj & Ajduković, 2022).

Studies of integration in Croatia show a general lack of intergroup contact as experienced by the RCMs, which is not surprising considering the numerical ratio of REFs and RCMs (Ajduković et al., 2019; Kiralj Lacković et al., 2023). This creates a particular setting for integration, one in which contact doesn't have a systematic effect on other indicators of integration, mainly attitudes, prejudice, social distance, or threat perception. Though many refugees passed through Croatia on their way to their destination countries, only a small number of RCMs have interacted with them first-hand.

---

## Goal of the study

Given the specificities of the Croatian context to study REF and RCMs integration and the documented influence that threat perception has on intergroup relations, we explored the potential predictors of threat perception to better understand what makes RCMs feel uneasy about the arriving group. The goal of this study was to test whether a set of chosen socio-demographic and socio-economic characteristics of the RCMs and socio-psychological indicators of integration can predict the levels of realistic and symbolic threat perception. Based on previous research, we expected that lower levels of both types of threat would be predicted by younger age, higher level of education, left-wing political orientation, perception of refugees as a part of the community to a greater degree, and higher support for the rights of refugees. We additionally expected higher household income and a positive perception of the impact of migration to predict lower levels of realistic threat perception. Lastly, we expected that less importance of religion and less frequent religious practices would predict lower symbolic threat perception.

Research of threat perception often tests the assumptions of ITT regarding the antecedents (predictors), and effects of intergroup threat (Stephan & Stephan, 2017). Due to the complex nature of the phenomena, the authors of the theory postulated that the links between the antecedents, threat, and its effects are reciprocal. They emphasized that in many situations, antecedents such as intergroup attitudes can cause threat perception, with such perception further strengthening the initial negative attitudes, and creating a loop. Indeed, in the context of integration, threat perception was meta-analytically found to be the strongest predictor of negative attitudes of RCMs towards REFs, further supporting the reciprocity of the elements of the ITT (Cowling et al., 2019). Simply put, the ITT states that the relations between causes and effects of threat are not straightforward. Therefore, perceiving refugees as a part of the community, perceiving a positive impact of migration, and supporting the rights of refugees can be considered as types of attitudes and beliefs defined by ITT as antecedents of threat (Stephan & Stephan, 2017).



We, therefore, decided to further define them as predictors in our models and test their potential in explaining realistic and symbolic threat perception.

## Method

The present study is a part of the international, multidisciplinary research project Forced Displacement and Refugee-Host Community Solidarity (FOCUS), financed by the European Commission (Horizon 2020 Programme for Research and Innovation<sup>1</sup>) to explain socio-economic and socio-psychological indicators of integration and the interrelations of dimensions of integration in REFs from Syria and RCMs in Sweden, Germany, Croatia, and Jordan. This study was approved by the Ethics Board of the Faculty of Humanities and Social Sciences, University of Zagreb.

## Participants

Participants were recruited based on the predefined criteria: had to be between 18 and 65 years of age, living in the country for at least six years and with a permanent residency or Croatian citizenship. They were approached face-to-face in three cities with the highest population of REFs from Syria at the time of the data collection – Zagreb, Karlovac, and Sisak. The sample was created using the Random Walk Technique, with 1228 households contacted and a 48% response rate.

A total of 600 RCMs participated in the study (55.2% women, compared to 52% in the national census; Croatian Bureau of Statistics, 2024), with two-thirds living in Zagreb (66.7%). On average, RCMs were 44 years old ( $SD = 13.5$ ; range 20 – 65, compared to 44.3 years based on the national census; Croatian Bureau of Statistics, 2024), and most of them had a middle level of education (74.7%, compared to 54.6% compared to the national census; Croatian Bureau of Statistics, 2024). A total of 93.7% of respondents declared as Christians, but only a small number stated that religion is “quite important” or “very important” to them (11.8% and 0.8%, respectively). A third of respondents stated that they

---

<sup>1</sup> Dataset available upon request.

are not politically committed (35.5%), others declared as “Centre” (22.8%), and equally across left and right poles (“Left centre” and “Left” a total of 21.3%; “Right centre and “Right” a total of 20.3%). The average household income was 1.292 € ( $SD = 561,3€$ ).

## Instruments

### *Socio-economic and socio-demographic characteristics*

Age, sex, importance of religion, frequency of practising religion, and political orientation were measured as socio-demographic characteristics, while level of education and household earnings were measured as socio-economic characteristics of RCMs. The importance of religion was measured with one item: *How important is religion in your life?* with participants responding on a 5-point Likert-type scale ranging from 1 (*not at all*) to 5 (*very*). The frequency of practising religion was measured using one item: *How often do you attend religious meetings?* with a response format ranging from *never* (1) to *several times a week* (5). Political orientation was measured using one item: *What is your political orientation?* with the responses ranging from 1 (*left*) to 5 (*right*).

### *Perception of the socio-economic impact of migration scale*

This scale was constructed for the study. RCMs estimated the degree to which they themselves believed migration impacts the socio-economic situation in the country using six items formed as statements regarding increase of competition in the job market, reduction of shortage of workers, general positive impact on the economic growth, ratio of cost and benefit of accepting refugees, risk of tax burden increase, and reduction of state financial support for Croatian citizens as a consequence of REF arrival. The responses on a Likert-type scale ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). The sample was split at random, the scale was revised based on the exploratory factor analysis (EFA) on half the sample, and the model was cross-validated by confirmatory factor analysis (CFA) on the other half (see Supplementary materials). The first four items showed good factor loadings and impact on the reliability of the scale and were therefore retained. The modification indices and residual variances

indicated the necessity to respecify the model by including a covariance between the first two items, and because their content is related to the perception of the impact of migration on the job market, this covariance was introduced in the model. The reliability of the final format of the scale was adequate ( $k = 4$ ,  $\omega = .766$ , CI 95% [.736, .796];  $\alpha = .753$ , CI 95% [.719, .784]).

#### *Support of rights of refugees scale*

The scale was previously constructed and used in Croatia (Ajduković et al., 2019). Contains 11 items which state the rights of REFs when they receive asylum status, which are guaranteed by Croatian law. Participants chose the degree to which they agreed with each statement on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). An exemplary item is “*Refugees and their families should have the right to primary, secondary and higher education same as Croatian citizens*”. The scale previously showed excellent reliability ( $\alpha = .95$ ; Ajduković et al., 2019), comparable to the present study ( $k = 11$ ,  $\omega = .918$ , CI 95% [.908, .928];  $\alpha = .918$ , CI 95% [.908, .927]). For this analysis, and due to the high number of items, the scale was reformed into three parcels of roughly equal factor loadings and means based on the results of EFA (Little, 2013; see Supplementary materials).

#### *Community*

RCMs were asked to estimate to what degree they feel REFs are a part of the community they live in Croatia, using one item “*How much do you feel refugees are a part of the Croatian community?*”, with answering options ranging from 1 (*not at all*) to 5 (*a lot*).

#### *Realistic and symbolic threat scale*

The scale was previously constructed and used in a study in Croatia, showing good metric characteristics ( $\alpha = .78$  to  $.83$ ; Ajduković et al., 2019). In the present study, a shortened version of six items with best metric properties was used. Three items measured realistic threat perception (e.g., “*Refugees take places at universities or jobs from Croats*”), and three measured symbolic threat perception (e.g., “*Refugees could endanger our values and our way of life*”). Each

item was assessed on a five-point Likert-type scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Both sub-scales showed adequate reliability (Realistic:  $k = 3$ ,  $\omega = .779$ , CI 95% [.749, .810];  $\alpha = .741$ , CI 95% [.703, .775]; Symbolic:  $k = 3$ ,  $\omega = .804$ , CI 95% [.776, .831];  $\alpha = .792$ , CI 95% [.763, .819]).

## Data analysis

Data were analysed using JASP v. 0.18.1.0. Structural equation modelling was used to test the hypotheses with a Maximum likelihood estimation method with robust error estimation, and a Full information maximum likelihood method of handling missing data. One variable showed missing data – household income, with  $N = 533$  valid cases. Other variables had no missing cases.

The criteria for good model fit used in all analyses were  $TLI \geq 0.95$ ,  $CFI \geq 0.95$ ,  $RMSEA < 0.06$  to  $0.08$  with a confidence interval, and  $SRMR \leq 0.08$  (Schreiber et al., 2006). For reliability, we interpreted the alpha reliability coefficients around .90 as “excellent”, around 0.80 as “very good”, and around 0.70 as “adequate” (Kline, 2011).

## Results

Correlations between the variables are presented in Table 1, and detailed descriptive statistics of individual items and scales are available in Supplementary materials. On average, RCMs believed that migration impacts the socio-economic situation in Croatia to a lesser degree, as the mean of the sample falls in the bottom half of the possible range ( $M = 8.92$ ;  $SD = 3.46$ ; range 4 – 18). RCMs felt moderate levels of perception of realistic and symbolic threat ( $M = 9.49$ ,  $SD = 2.78$  and  $M = 10.27$ ,  $SD = 2.88$  respectively, range 3 – 15). They showed moderately high support for the REF rights ( $M = 37.18$ ,  $SD = 9.73$ , range 11 – 55) and estimated that REFs are a part of the community to a small degree ( $M = 2.05$ ,  $SD = 0.89$ , range 1 – 5).

Structural equation modelling was used to test the research hypotheses. Two separate analyses were conducted, one for each type of threat as a criterion. The sets of predictors per model differed and were chosen based on theory and previous research. The socio-economic characteristics of the RCMs

and the perception of the impact of migration were exclusive to the model predicting realistic threat, and the frequency of religious practices and the importance of religion were exclusive to the model predicting symbolic threat. The same socio-demographic and socio-psychological predictors were included in both models.

**Table 1**

*Correlations between the variables*

Variable	1	2	3	4	5	6	7	8	9	10
1. Age	—									
2. Level of education	-.02	—								
3. Income	-.21***	.26***	—							
4. FRM	.04	.13**	.10*	—						
5. IRM	.12**	.01	.01	.66***	—					
6. Political orientation	-.07	-.08	.10	.32***	.39***	—				
7. Impact of migration	-.04	-.05	-.09*	-.09*	-.09*	-.16**	—			
8. Support REF rights	-.05	.15***	.08	-.04	-.05	-.11*	.32***	—		
9. Community	.05	-.03	.01	-.07	.01	.03	.06	.41***	—	
10. Realistic threat	.09*	-.20***	-.13**	.07	.05	.20***	-.12**	-.37***	-.21***	—
11. Symbolic threat	.10*	-.13**	-.11*	.08	.07	.18***	-.17***	-.53***	-.30***	.69***

*Note.* Income = Household income (in thousands); FRM = Frequency of Religious Meetings; IRM = Importance of Religious Meetings.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

## Realistic threat perception

The model predicting the realistic threat in RCMs was made up of two latent predictors with adjacent indicators (Impact of migration, and Support for refugee rights), and five observed predictors (Age, Level of education, Total household income, Political orientation, and Refugees as community members). Covariances between observed predictors were allowed. Model showed unsatisfactory fit ( $\chi^2 (7, N = 600) = 501.746, p < .001$ ; CFI = .859; TLI = .827; RMSEA = .096, CI 90% [.088, .104]; SRMR = .096). Residual covariances and modification indices showed that the model would fit better if Support for refugee rights and Refugees as community members covaried. Because such covariance is theoretically justified, it was included in the second model which showed a better fit ( $\chi^2 (79, N = 600) = 329.637, p < .001$ ; CFI = .917; TLI = .896; RMSEA = .073, CI 90% [.065, .081]; SRMR = .071). The model explained a total of 21% of the criterion variance ( $R^2 = .210$ ). Age, Total household income, Political orientation, and Support for refugee rights were significant predictors of the Perception of realistic threat in RCMs (Table 1, Figure 1).

## Symbolic threat perception

The model predicting the realistic threat in RCMs was made up of two latent predictors with adjacent indicators (Impact of migration, and Support for refugee rights), and five observed predictors (Age, Level of education, Total household income, Political orientation, and Refugees as community members). Covariances between observed predictors were allowed. Model showed unsatisfactory fit ( $\chi^2 (7, N = 600) = 501.746, p < .001$ ; CFI = .859; TLI = .827; RMSEA = .096, CI 90% [.088, .104]; SRMR = .096). Residual covariances and modification indices showed that the model would fit better if Support for refugee rights and Refugees as community members covaried. Because such covariance is theoretically justified, it was included in the second model which showed a better fit ( $\chi^2 (79, N = 600) = 329.637, p < .001$ ; CFI = .917; TLI = .896; RMSEA = .073, CI 90% [.065, .081]; SRMR = .071). The model explained a total of 21% of the criterion variance ( $R^2 = .210$ ). Age, Total household income, Political orientation,

and Support for refugee rights were significant predictors of the Perception of realistic threat in RCMs (Table 1, Figure 1).

The model for the symbolic threat was defined with a single latent predictor and adjacent indicators (Support for refugee rights), and six observed predictors (Age, Level of education, Political orientation, Importance of religion in life, Frequency of practising religious customs and Refugees as community members). Covariances between observed predictors were allowed. The model showed satisfactory fit ( $\chi^2(38, N=600) = 254.925, p < .001$ ; CFI = .908; TLI = .876; RMSEA = .098, CI 90% [.086, .109]; SRMR = .092). In line with the tested model for perception of a realistic threat, residual covariances and modification indices for this model also showed that covariance between Support for refugee rights and Refugees as community members significantly improved the model fit, and such change is theoretically justified. The model with this addition showed a good fit ( $\chi^2(42, N=600) = 148.849, p < .001$ ; CFI = .955; TLI = .939; RMSEA = .065, CI 90% [.054, .077]; SRMR = .046) and explained nearly 38% of the variance of the criterion ( $R^2 = .378$ ).

Age, Political orientation, Refugees as community members and Support for refugee rights proved to be significant predictors of the Perception of symbolic threat in RCMs (Table 2, Figure 1).

**Table 2**

*Regression coefficients in models predicting perception of realistic and symbolic threat in RCMs*

Perception of realistic threat	<i>b</i>	$\beta$	<i>z</i>	95% CI
Age	0.00	.06	1.45	[-0.00, 0.01]
Level of education	-0.08	-.11	-2.58**	[-0.01, -0.02]
Household income	-0.02	-.11	-2.32*	[-0.04, -0.00]
Political orientation	0.14	.22	4.26***	[0.07, 0.20]
Impact of migration	-0.02	-.01	-0.12	[-0.21, 0.18]
Support for REF rights	-0.29	-.31	-5.52***	[-0.39, -0.19]
REFs as community members	-0.08	-.09	-1.78	[-0.18, 0.01]
Perception of symbolic threat	<i>b</i>	$\beta$	<i>z</i>	95% CI
Age	0.01	.11	2.70**	[0.00, 0.01]
Level of education	-0.06	-.06	-1.73	[-0.13, 0.01]
Frequency of religious practices	0.05	.04	0.80	[-0.07, 0.16]
Importance of religion	-0.02	-.02	-0.43	[-0.13, 0.08]
Political orientation	0.12	.15	3.11**	[0.05, 0.20]
Support for REF rights	-0.62	-.52	-10.56***	[-0.73, -0.50]
REF as community members	-0.14	-.12	-2.52*	[-0.21, -0.03]

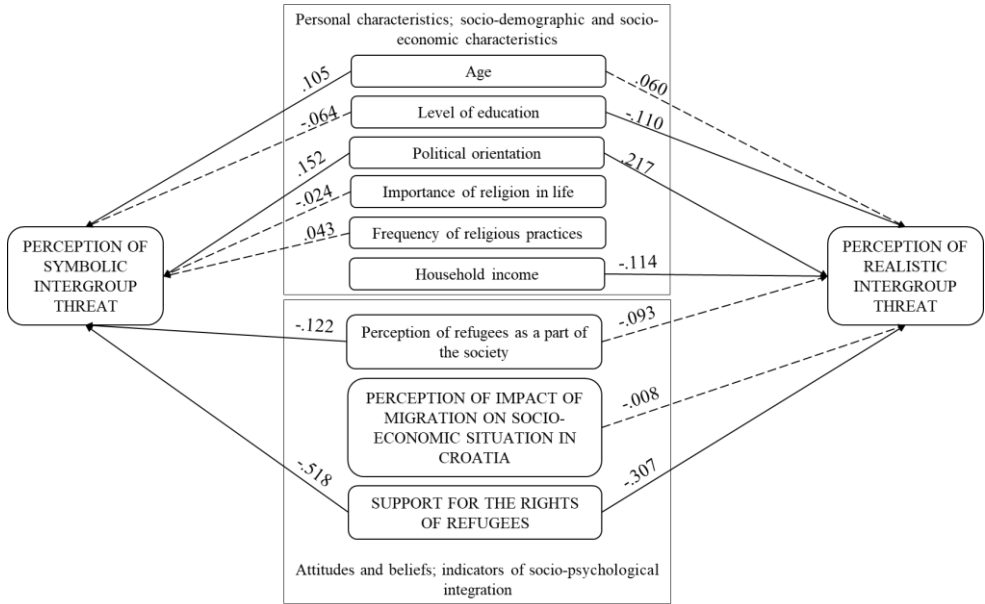
*Note.* CI = confidence interval.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .



Figure 1

*Conceptual overview of two models of predictors of the perception of realistic and perception of symbolic intergroup threat*



*Note.* Latent variables are noted in capitals. Solid lines represent relations at  $p < .05$  or lower, dashed lines represent non-significant relations

## Discussion

Croatia is a country in which the integration of REFs from other countries, and specifically from other ethnical groups, is a relatively new process, intensified in the previous decade by the massive migration of REFs from Syria and surrounding countries in the mid-2010s. At the time, several studies captured the feelings of threat RCMs experienced concerning the arrival of REFs and asylum seekers. Guided by the premises of the ITT and the findings of the aforementioned studies, we tested a set of socio-demographic, socio-

---

economic, and socio-psychological predictors of perception of realistic and symbolic intergroup threat in RCMs in Croatia.

The two prediction models tested in this study described the data well and highlighted several predictors for each type of threat. Quite a large share of the threat perception was explained: more than a fifth of realistic threat, and more than a third of symbolic threat. RCMs with lower levels of education, politically right-wing oriented, who had lower household income and showed lesser support for the rights of REFs also showed higher levels of realistic threat. Older RCMs, those who were politically right-wing oriented, who perceived REFs to be a part of the society in Croatia to a lesser degree and showed lesser support for REF rights also showed higher levels of symbolic threat.

Age was significantly related to the perception of threat towards migrants and asylum seekers in other studies as well, and in the same direction as found here (Ajduković et al., 2019; Hartley & Pedersen, 2015; Korol & Bevalander, 2022; Sunhan et al., 2012). Here, age significantly predicted the levels of symbolic, but not realistic threat. It seems that RCMs of all ages were equally likely to feel that their job or education prospects were in danger, as well as their physical integrity and the possibility of rising criminal activities caused by REFs. On the other hand, symbolic threat was more prominent in older participants. During the Croatian Homeland War in the 1990s, both national and cultural belonging was strongly highlighted. The views of older RCMs may be shaped by their experience of the war which has now manifested in the eagerness to preserve the cultural, historical and religious homogeneity in the country. It was previously shown that both RCMs and REFs in Croatia see their shared experience of war as a topic which could promote empathy and understanding. Nevertheless, RCMs believed that this war fostered negative attitudes towards Muslim REFs, emphasising the differences between the local and Middle Eastern cultures (Kiralj & Ajduković, 2022). This is in line with ITT which states that the nature of previous interactions with members of the other group has the power to shape expectations of future encounters (Stephan & Stephan, 2017). It is also possible that younger RCMs are more culturally and socially open to other groups and therefore feel less of a threat to their own

norms and way of life, as it was shown that socio-cultural conservatism increases with age, via a decrease in the personality factor Openness to Experience (Cornelis et al., 2009).

Better educated RCMs showed lower realistic threat, with no difference in the levels of threat found for the symbolic threat. RCMs with lower levels of education may perceive REFs as a greater threat in the job market and believe they are competing for jobs of similar complexity. On the other hand, those with higher education possibly believe that the jobs they are aiming for (or have) are beyond the reach of REFs, and thus do not feel that they are competing for the same positions. Other studies also showed that the level of education is related to threat perception in the same direction (Ajduković et al., 2019; Hartley & Pedersen, 2015; Sunhan et al., 2012). Generally, the studies of negative social views such as anti-democratic attitudes, political attitudes, and authoritarianism, indicate that education and such views of social groups could be related (Feldman, 2021).

As expected, political orientation significantly predicted both types of threat perception with right-wing-oriented RCMs experiencing higher levels of threat than left-wing-oriented ones. These findings are in line with previous research which showed that those who identified as right-wing were more prone to perceiving asylum seekers as a threat, and in turn supported more exclusionary policies (Canetti et al., 2016), and had higher levels of intergroup anxiety and other types of threat (Koc & Anderson, 2018; Landmann et al., 2019). The importance of religion and adherence to religious practices did not significantly predict the levels of symbolic threat, contrary to our expectations. This might be because the items used to measure symbolic threat emphasised culture, values, and way of life more than religious beliefs. Additionally, political orientation as a strong predictor could have outshined the role of religion, as these variables showed high covariances between each other (see Supplementary materials), which has been also found previously (Ajduković et al., 2019, Koc & Anderson, 2018). Household income significantly negatively predicted the perception of realistic threat, in line with the previously found role of the standard of living (Ajduković et al., 2019), and perceived personal wealth

(Celikkol et al., 2022). Similarly to the significance of the level of education, a higher household income probably leads to more security that one's socio-economic position is safe regardless of the arrival of migrants.

Regarding the role of socio-psychological indicators of integration, we focused on three which we theorised might explain the variability in threat perception. We hypothesised that perceiving migration as harming the economy might predict a higher realistic threat. However, the results did not support this hypothesis. While perception of the impact of migration didn't predict realistic threat, it had a significant covariance with Support for the rights of REFs - the best predictor of lower realistic threat in the model (see Supplementary materials), which could have diminished the potential of the Perception of the impact of migration to predict realistic threat. Given the limited first-hand experience of intergroup contact of RCMs with REFs, at the time of data collection, most of the participants may have not felt a threat to their jobs, economic prosperity, or access to other resources. At the same time, their clear support for the rights of REFs who have been granted asylum and which are guaranteed by the government, reflect their humanistic position towards people who fled their country due to war and persecution. In a broader sense, this is consistent with the neutral attitudes towards REFs in the country, which were found in previous studies (Ajduković et al, 2019; Gregurović et al, 2011; Henjak, 2018).

Support for the rights of REFs significantly predicted lower threats and had the highest regression coefficients in both models. Support for humanitarian policy predicts lower threat perception (Hercowitz-Amir et al., 2017), and supporting migrant rights is related to perceiving migration as involuntary, perceiving people living in the receiving country as "real" citizens, and having a sense of common belonging (Verkuyten et al., 2018).

Perceiving REFs as a part of society was related to lower levels of symbolic threat, which is consistent with the social re-categorisation process (Hogg & Vaughan, 2005). This indicates that the sense of who is a part of the society is more closely related to perceiving cultural closeness and similarities in the way of life, which is an important practical indicator of intergroup

integration. From a practical perspective, fostering openness of RCMs for the integration of REFs can be facilitated by providing various opportunities to meet, interact and get to know each other as individuals and group members in safe and pleasant circumstances, as argued by the intergroup contact hypothesis and the premises of the ITT.

### Strengths and limitations

Several characteristics of this study are crucial for the interpretation and generalisation of the findings on the population of RCMs in Croatia. The sample was formed randomly and in those cities in which the concentration of REFs from Syria was the highest at the time of the data collection. These cities were chosen because they represent the areas in which integration takes place and in which the thoughts, feelings and behaviours of RCMs are most relevant to the integration process. The majority of the instruments were adapted from previous studies in Croatia and were chosen due to their good properties which were replicated here. Data were analysed using advanced statistical and psychometric methods, with the structural models based on the pre-existing research and strong theoretical frameworks. The models fitted the data and pointed at several significant predictors of two types of threat. Because the ratio of parameters to sample size would be unfavourable, we were unable to test a single model specifying both types of threat as criteria. Instead, we defined two models based on prior knowledge and our expectations of the socio-demographic, socio-economic and socio-psychological predictors that could explain each type of threat individually. In future studies, larger samples should allow for testing of all these predictors in a single model, gaining further insight into the covariances of socio-economic, socio-demographic and socio-psychological predictors of intergroup threat in the context of integration. Moreover, the RCMs should have more first-hand and rich interaction experience with REFs who stay in the country which would allow further exploration of the role of contact in the dynamics of threat and other indicators of intergroup relations between RCMs and REFs.

---

## Conclusions

Integration of REFs and RCMs is a process which poses many challenges to both groups, and those challenges which are related to establishing pleasant intergroup relations and sentiments between them can be viewed as a socio-psychological dimension of integration. With the arrival of REFs in the receiving country, the interaction or expectations of this interaction with the members of the two groups are influenced by psychological characteristics and social processes. Perception of threat is an unpleasant feeling based on personal characteristics, attitudes, experiences, history of intergroup relations and other factors. We showed that some socio-economic, socio-demographic, and socio-psychological characteristics of RCMs can predict the levels of perceived symbolic and realistic threat from the REFs. Two were particularly highlighted – political orientation and support for the rights of REFs, whereas more liberal political orientation and support for the rights are related to a lower perception of the threat due to the arrival of REFs. In a context of scarce intergroup contact, where breaking through prejudice and threat perception is more difficult, understanding their potential antecedents can be beneficial in detecting those subgroups of RCMs that might be particularly prone to negative sentiments.

### *Funding*

The present study is a part of the international, multidisciplinary research project *Forced Displacement and Refugee-Host Community Solidarity* (FOCUS), financed by the European Commission from the Horizon 2020 Programme for Research and Innovation under grant number 822401 (<https://focus-refugees.eu/>; <https://cordis.europa.eu/project/id/822401>).

### *Conflict of interest*

We have no conflicts of interest to disclose.

### *Data availability statement*

Data used in this paper are available upon a reasonable request.

## References

- Aberson, C. L. (2019). Indirect effects of threat on the contact–prejudice relationship: A meta-analysis. *Social Psychology*, 50(2), 105–126. <https://doi.org/10.1027/1864-9335/a000364>
- Aberson, C. L. & Gaffney, A. M. (2008). An integrated threat model of explicit and implicit attitudes. *European Journal of Social Psychology*, 39, 808–830. <https://doi.org/10.1002/ejsp.582>
- Ager, A. & Strang, A. (2008). Understanding Integration: A conceptual framework. *Journal of Refugee Studies*, 21(2), 166–191. <https://doi.org/10.1093/jrs/fen016>
- Ajduković, D., Čorkalo Biruški, D., Gregurović, M., Bojić Matić, J. & Župarić-Iljić, D. (2019) Challenges of integrating refugees into Croatian society: Attitudes of citizens and the readiness of local communities. Available at: <https://core.ac.uk/download/pdf/186615497.pdf>
- Allport, G. W. (1954b). *The nature of prejudice*. Adison-Wesley.
- Barlow, F. K., Paolini, S., Pedersen, A., Hornsey, M. J., Radke, H. R. M., Harwood, J., & Sibley, C. G. (2012). The contact caveat: Negative contact predicts increased prejudice more than positive contact predicts reduced prejudice. *Personality and Social Psychology Bulletin*, 38(12), 1629–1643. <https://doi.org/10.1177/0146167212457953>
- Berry, J. W., Kim, U., Minde, T., & Mok, D. (1987). Comparative studies of acculturative stress. *International Migration Review*, 21, 491–511. <https://doi.org/10.1177/019791838702100303>
- Berry, J. W., Trimble, J. E., & Olmedo, El, L. (1986). Assessment of acculturation. In: W. J. Lonner & J. W. Berry (Ed.), *Field methods in cross-cultural research* (pp. 290–327). Sage.
- Canetti, D., Snider, K. L., Pedersen, A., & Hall, B. J. (2016). Threatened or Threatening? How Ideology Shapes Asylum Seekers' Immigration Policy Attitudes in Israel

and Australia. *Journal of refugee studies*, 29(4), 583-606.

<https://doi.org/10.1093/jrs/few012>

- Celikkol, G., Renvik, T. A., Sortheix, F. M., Jasinskaja-Lahti, I., Jetten, J., Ariyanto, A., Autin, F., Ayub, N., Badea, C., Besta, T., Butera, F., Costa-Lopes, R., Cui, L., Fantini, C., Finchilescu, G., Gaertner, L., Gollwitzer, M., Gómez, Á., González, R., ... Wohl, M. J. A. (2022). Individual, group, and temporal perspectives on the link between wealth and realistic threat. *Current Research in Ecological and Social Psychology*, 3, Article 100054. <https://doi.org/10.1016/j.cresp.2022.100054>
- Corenblum, B., & Stephan, W. G. (2001). White fears and native apprehensions: An integrated threat theory approach to intergroup attitudes. *Canadian Journal of Behavioural Science / Revue canadienne des sciences du comportement*, 33(4), 251-268. <https://doi.org/10.1037/h0087147>
- Cornelis, I., Van Hiel, A., Roets, A. & Kossowska, M. (2009). Age differences in conservatism: evidence on the mediating effects of personality and cognitive Style. *Journal of Personality*, 77, 51-88. <https://doi.org/10.1111/j.1467-6494.2008.00538.x>
- Cowling, M. M., Anderson, J. R., & Ferguson, R. (2019). Prejudice-relevant Correlates of Attitudes towards Refugees: A Meta-analysis. *Journal of Refugee Studies*, 32(3), 502-524. <https://doi.org/10.1093/jrs/fey062>
- Croatian Bureau of Statistics (2024). Statistics: Population – Census. Available at: <https://podaci.dzs.hr/en/statistics/population/>
- DeVaul-Fetters, A. N. (2014). Reactions to refugees: Do stronger believers in a just world compensate, dehumanize, and perceive refugees as more responsible for their status? PhD thesis. Electronic Thesis and Dissertation Repository. Available at: <https://ir.lib.uwo.ca/etd/2148/>
- European Commission (2005). A Common Agenda for Integration. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52005DC0389>
- Feldman, S. (2021). Authoritarianism, Education, and Support for Right-Wing Populism. In J. P. Forgas, W. D. Crano & K. Fiedler (Eds.) *The Psychology of Populism: The Tribal Challenge to Liberal Democracy* (pp. 348-364). Routledge. <https://doi.org/10.4324/9781003057680>
- Geschke, D. (2007). *Prejudice against and discrimination of asylum seekers: Their antecedents and consequences in a longitudinal field study*. Dissertation



- thesis.  
[https://psydok.psycharchives.de/jspui/bitstream/20.500.11780/445/1/Geschke\\_dissertation.pdf](https://psydok.psycharchives.de/jspui/bitstream/20.500.11780/445/1/Geschke_dissertation.pdf)
- Gregurović, M., Kuti, S., & Župarić-Iljić, D. (2016). Attitudes towards immigrant workers and asylum seekers in Eastern Croatia: Dimensions, determinants and differences. *Migracijske i etnicke teme*, 32(1), 91-122.  
<https://doi.org/10.11567/met.32.1.4>
- Hartley, L. K., & Pedersen, A. (2015). Asylum seekers and resettled refugees in Australia: Predicting social policy attitude from prejudice versus emotion. *Journal of Social and Political Psychology*, 3, 179-197. <https://doi.org/10.5964/jspp.v3i1.476>
- Healy, E., Thomas, E., & Pedersen, A. (2017). Prejudice, polyculturalism, and the influence of contact and moral exclusion: A comparison of responses toward LGBTI, TI, and refugee groups. *Journal of Applied Social Psychology*, 47(7), 389-399.  
<https://doi.org/10.1111/jasp.12446>
- Henjak, A. (2018). Migrantska kriza 2015. i determinante stavova birača [Migrant crisis 2015. and determinants of voters' attitudes]. *Političke analize*, 9 (36), 3-9. Available at: <https://hrcak.srce.hr/216874>
- Hercowitz-Amir, A., Rajjman, R., & Davidov, E. (2017). Host or hostile? Attitudes towards asylum seekers in Israel and in Denmark. *International Journal of Comparative Sociology*, 58(5), 416-439. <https://doi.org/10.1177/0020715217722039>
- Hogg, M. A. & Vaughan, G. M. (2005). *Social Psychology*. Prentice Hall.
- Kang, L. L. (2018). Religious fundamentalism and attitudes toward immigrants and Syrian refugees. *Dissertation Abstracts International: Section B: The Sciences and Engineering*. ProQuest Information & Learning, 1-84. Available at: <http://hdl.handle.net/2104/10100>
- Kinder, D. R. & Sears, D. O. (1981). Prejudice and politics: Symbolic racism versus racial threats to the good life. *Journal of Personality and Social Psychology*, 40, 414-431. <https://doi.org/10.1037/0022-3514.40.3.414>
- Kiralj Lacković, J., Ajduković, D., Abdel-Fatah, D., Hertner, L. & Alkhatib, W. (2023) Socio-psychological integration from the perspective of receiving communities: a cross-country comparison between Sweden, Germany, Croatia and Jordan. *Comparative Migration Studies* 11(30), 1-23. <https://doi.org/10.1186/s40878-023-00353-0>

- Kiralj, J. & Ajduković, D. (2022). Integration of refugees in Croatia – a qualitative study of the integration process and intergroup relations of refugees from Syria. *Društvena istraživanja*, 31(4) 661-682. <https://doi.org/10.5559/di.314.05>
- Kline, R. B. (2011). *Principles and practice of structural equation modelling* (3<sup>rd</sup> ed.). The Guilford press.
- Koc, Y., & Anderson, J. R. (2018). Social distance toward Syrian refugees: The role of intergroup anxiety in facilitating positive relations. *Journal of Social Issues*, 74(4), 790-811. <https://doi.org/10.1111/josi.12299>
- Korol, L. & Bevalander, P. (2022). The power of positive thinking: how positive opinions of refugees' impact on the host society generate positive behavioural intentions. *Journal of refugee studies*, 36(1), 22-45. <https://doi.org/10.1093/jrs/feac065>
- Landmann, H., Gaschler, R., & Rohmann, A. (2019). What is threatening about refugees? Identifying different types of threat and their association with emotional responses and attitudes towards refugee migration. *European Journal of Social Psychology*, 49(7), 1401-1420. <https://doi.org/10.1002/ejsp.2593>
- Little, T. D. (2013). *Longitudinal Structural Equation Modeling*. The Guilford press.
- Matthews, M., & Levin, S. (2012). Testing a dual process model of prejudice: Assessment of group threat perceptions and emotions. *Motivation and Emotion*, 36, 564-574. <https://doi.org/10.1007/s11031-012-9280-y>
- McLaren, L. M. (2003). Anti-immigrant prejudice in Europe: Contact, threat perception, and preferences for the exclusion of migrants. *Social Forces*, 81(3), 909-936. <https://doi.org/10.1353/sof.2003.0038>
- Ministry of Internal Affairs of the Republic of Croatia. (2022). "Statistika: Tražitelji međunarodne zaštite [Statistics: Asylum seekers]." Available at: <https://mup.gov.hr/pristup-informacijama-16/statistika-228/statistika-trazitelji-medjunarodne-zastite/283234>
- Ministry of Internal Affairs of the Republic of Croatia. (2023). "Statistika: Tražitelji međunarodne zaštite [Statistics: Asylum seekers]." Available at: <https://mup.gov.hr/UserDocImages/statistika/2023/11/web%20statistike%202023%20Q3.xlsx>
- Murray, K. E., & Marx, D. M. (2013). Attitudes toward unauthorized immigrants, authorized immigrants, and refugees. *Cultural Diversity and Ethnic Minority Psychology*, 19(3), 332-341. <https://doi.org/10.1037/a0030812>

- Ndofor-Tah, C., Strang, A., Phillimore, J., Morrice, L., Michael, L., Wood, P. & Simmons, J. (2019). Home Office Indicators of Integration framework. Home Office Research Report 109. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/835573/home-office-indicators-of-integration-framework-2019-horr109.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/835573/home-office-indicators-of-integration-framework-2019-horr109.pdf)
- Newman, B. J., Hartman, T. K., & Taber, C. S. (2012). Foreign language exposure, cultural threat, and opposition to immigration. *Political Psychology*, 33(5), 635-657. <https://doi.org/10.1111/j.1467-9221.2012.00904.x>
- Office for Human Rights and Rights of Minorities. (2017). Action plan for integration of persons under international protection for the period of 2017. to 2019. Available at: <https://pravamanjina.gov.hr/UserDocsImages//dokumenti//AKCIJSKI%20PLAN%20ZA%20INTEGRACIJU%202017-2019.pdf>
- Pettigrew, T. F. & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology*, 90(5), 751-783. <https://doi.org/10.1037/0022-3514.90.5.751>
- Pettigrew, T. F., Tropp, L. R., Wagner, U. & Christ, O. (2011). Recent advances in intergroup contact theory. *International Journal of Intercultural Relations*, 35(3), 271-280. <https://doi.org/10.1016/j.ijintrel.2011.03.001>
- Riek, B. M., Mania, E.W., & Gaertner, S. L. (2006). Intergroup threat and outgroup attitudes: a meta-analytic review. *Personality and Social Psychology Review*, 10(4), 336-353. [https://doi.org/10.1207/s15327957pspr1004\\_4](https://doi.org/10.1207/s15327957pspr1004_4)
- Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting structural equation modelling and confirmatory factor analysis results: A review. *The Journal of Educational Research*, 99(6), 323-338. <https://doi.org/10.3200/JOER.99.6.323-338>
- Sherif, M. & Sherif, C. W. (1969). Ingroup and intergroup relations: Experimental analysis. In: M. Sherif and C. W. Sherif (Ed.), *Social psychology* (pp. 221-266). Harper & Row.
- Stephan, W. G. & Stephan, C. W. (2000). An integrated threat theory of prejudice. In: S. Oskamp (Ed.), *The Claremont Symposium on Applied Social Psychology Reducing prejudice and discrimination* (pp. 23 – 45).

- Stephan, W. G. & Stephan, C. W. (2017). Intergroup threat theory. In: Y. Y. Kim and K. L. McKay-Semmler (Ed.) *The International Encyclopedia of Intercultural Communication*. <https://doi.org/10.1002/9781118783665.ieicc0162>
- Suhnan, A., Pedersen, A., & Hartley, L. (2012). Re-examining prejudice against asylum seekers in Australia: The role of people smugglers, the perception of threat, and acceptance of false beliefs. *The Australian Community Psychologist*, 24(2), 79-97. Available at: [https://www.researchgate.net/publication/263699025\\_Re-examining\\_prejudice\\_against\\_asylum\\_seekers\\_in\\_Australia\\_The\\_role\\_of\\_people\\_smugglers\\_the\\_perception\\_of\\_threat\\_and\\_acceptance\\_of\\_false\\_beliefs\\_The\\_Australian\\_Community\\_Psychologist\\_24\\_79-97](https://www.researchgate.net/publication/263699025_Re-examining_prejudice_against_asylum_seekers_in_Australia_The_role_of_people_smugglers_the_perception_of_threat_and_acceptance_of_false_beliefs_The_Australian_Community_Psychologist_24_79-97)
- Turoy, S. K. M., Kane, R., & Pedersen, A. (2013). The willingness of a society to act on behalf of Indigenous Australians and refugees: The role of contact, intergroup anxiety, prejudice, and support for legislative change. *Journal of Applied Social Psychology*, 43(Suppl 2), 179-195. <https://doi.org/10.1111/jasp.12017>
- Van Assche, J., Swart, H., Schmid, K., Dhont, K., Al Ramiah, A., Christ, O., Kauff, M., Rothmann, S., Savelkoul, M., Tausch, N., Wölfer, R., Zahreddine, S., Saleem, M., & Hewstone, M. (2023). Intergroup contact is reliably associated with reduced prejudice, even in the face of group threat and discrimination. *American Psychologist*, 78(6), 761-774. <https://doi.org/10.1037/amp0001144>
- Van Prooijen, J. W., Krouwel, A. P. M. & Emmer, J. (2017). Ideological responses to the EU refugee crisis: the left, the right and the extremes. *Social psychological and personality science*, 9(2), 143-150. <https://doi.org/10.1177/1948550617731501>
- Verkuyten, M., Mepham, K., & Kros, M. (2018). Public attitudes towards support for migrants: the importance of perceived voluntary and involuntary migration. *Ethnic & Racial Studies*, 41(5), 901-918. <https://doi.org/10.1080/01419870.2017.1367021>

## Supplementary materials

### Table A

#### *Descriptive statistics of interval variables*

	<i>N</i>		<i>M</i>	<i>SD</i>	Skew.	Kurt.	Min.	Max.
	Valid	Missing						
Age	600	0	44.14	13.48	-0.14	-4.09	20	66
Household income (in thousands) <sup>1</sup>	533	67	9.74	4.23	0.29	-3.17	0.8	25
Frequency of religious meetings	600	0	2.05	0.89	0.56	-3.21	1	5
Importance of religious meetings	600	0	1.44	1.05	2.06	-0.51	1	5
Political orientation	600	0	1.91	1.75	0.30	-4.28	0	5
Impact of migration	600	0	10.27	2.60	0.53	-3.06	4	19
Rights of refugees Community	600	0	34.09	8.75	-0.85	-2.54	10	50
Realistic threat perception	600	0	2.05	0.89	0.56	-3.21	1	5
Symbolic threat perception	600	0	9.49	2.78	-0.13	-3.71	3	15

*Note.* Skew. – Skewness; Kurt. – Kurtosis; Min – Minimum; Max – Maximum.

<sup>1</sup> During the data collection, Croatia was still using HRK as a currency. The results presented here are in HRK, and in the main text the descriptives have been recalculated into Euro which is the current currency of the country.

**Table B**

*Results of the exploratory factor analysis (Principal component analysis; Maximum likelihood factoring method) of Perception of the socio-economic impact of migration scale*

Model	$\chi^2$	<i>df</i>	<i>p</i>
	30.16	4	<.001
Items	Factor loadings <sup>1</sup>		
	1	2	Uniquity
In general, the refugees in /country/ will increase the competition on the labor market.	.47	.11	.75
In general, the refugees will reduce the shortage of labor in /country/.	.73	.04	.46
In general, the refugees will have a positive impact in economic growth in /country/.	.88	-.08	.25
The refugees in /country/ will bring more revenues that costs for the government.	.65	-.11	.60
Due to the government spending for refugees, my taxes will have to be increased.	.17	.63	.53
Due to the government spending for refugees, there will be less government benefits for the other population.	-.23	1.02	.01
Factor characteristics	1	2	
Non-rotated solution			
Sum of factor loadings	2.05	1.36	
Proportion of explained variance	0.34	0.23	
Cumulative proportion of explained variance	0.34	0.57	
Rotated solution			
Sum of factor loadings	1.98	1.43	
Proportion of explained variance	0.33	0.24	
Cumulative proportion of explained variance	0.33	0.57	

<sup>1</sup> rotation method = Promax

**Table C**

*Fit indicators for the CFA model of Perception of the socio-economic impact of migration scale*

	Model 1	Model 2	Model 3	Model 4
N. of latent variables	2	1	1	1
N. of items	6	6	4	4 <sup>a</sup>
$\chi^2$	67.45	182.51	28.65	0.05
<i>df</i>	9	9	1	1
<i>p</i>	< .001	< .001	< .001	0.826
CFI	0.880	0.643	0.916	1.000
TLI	0.799	0.404	0.747	1.018
RMSEA	0.147	0.253	0.211	0
RMSEA CI 90%				
Lower	0.115	0.222	0.147	0.000
Upper	0.181	0.286	0.282	0.092
SRMR	0.076	0.123	0.054	0.002

*Note.* *N* = 300. CFI – Comparative Fit Index; TLI – Tucker-Lewis Index; RMSEA – Root mean square error of approximation; CI – Confidence Interval; SRMR – Standardized root mean square residual.

Estimation method: Maximum likelihood (ML); missing data handling: Full information maximum likelihood (FIML).

a – covariances between items 1 and 2.

**Table D**

*Factor loadings and descriptive statistics of the items of the Support for refugee rights scale with the parcel forming method*

Items	$\lambda$	$M$	$SD$	Parcel
Refugees should have access to health care same as Croatian citizens.	0.84	3.61	1.18	A
Refugees in Croatia should have the right to get a job.	0.81	3.64	1.12	B
Refugees should have access to employment incentives (e.g. training, retraining) same as Croatian citizens.	0.80	3.15	1.21	C
Refugees and their families should have the right to primary, secondary and higher education same as Croatian citizens.	0.80	3.58	1.11	A
Refugees should be helped to integrate in our society (e.g. by learning Croatia, learning about our culture, psychological and social support).	0.74	3.89	1.16	B
If refugees cannot pay for legal aid, it should be provided to them free of charge.	0.71	3.10	1.31	C
Refugees should in no case be returned to their country if it would endanger their lives or freedom.	0.67	3.62	1.12	A
If refugees do not have documents confirming their educational qualifications, they should be recognized if they meet the conditions of the relevant authorities.	0.62	3.22	1.27	B



Refugees who entered Croatia illegally should not be prosecuted if they were subjected to persecution in their own country.	0.62	3.20	1.34	C
The state should provide free housing to refugees who cannot afford it themselves.	0.61	2.78	1.24	A
Refugee families should be allowed to join them in Croatia	0.60	3.41	1.04	B
Refugees should have the right to raise their children according to their culture and beliefs. <sup>a</sup>	0.26	3.77	0.82	/
	Mean of items' $\lambda$ per parcel	<i>M</i>	<i>SD</i>	
Parcel A	0.73	3.40	0.92	
Parcel B	0.69	3.54	0.90	
Parcel C	0.71	3.15	1.08	

*Note:* a – the item showed very low factor loading and was therefore excluded from the parcelling and further analyses.

**Table E**

*Fit indicators for the SEM model predicting the perception of realistic threat in receiving community members (RCMs)*

	Model 1	Model 2
AIC	27940.60	
BIC	28195.62	
$\chi^2$	501.75	329.64
<i>df</i>	77	79
<i>p</i>	< .001	< .001
CFI	0.859	0.917
TLI	0.827	0.896
RMSEA	0.096	0.073
RMSEA CI 90%		
Lower	0.088	0.065
Upper	0.104	0.081
SRMR	0.096	0.071
$R^2$	0.189	0.210

*Note.* *N* = 600. AIC – Akaike's Information Criteria; BIC – Bayesian Information Criteria; CFI – Comparative Fit Index; TLI – Tucker-Lewis Index; RMSEA – Root mean square error of approximation. CI – Confidence Interval; SRMR – Standardized root mean square residual.

Estimation method: Maximum likelihood (ML); missing data handling: Full information maximum likelihood (FIML).

**Table F**

*Factor loadings in SEM model for perception of realistic threat for final model (model 2) in RCMs*

Latent variable	Latent variable indicator	$\lambda$	$SE$	$z$	$p$	95% CI	
						Lower	Upper
Perception of the impact of migration on the socio-economic situation in Croatia	Increase of competition in the job market	1.00	0.00			1.00	1.00
	Reduction of shortage of workers	1.77	0.21	8.38	< .001	1.36	2.19
	General positive impact on economic growth	2.73	0.36	7.49	< .001	2.01	3.44
	Positive ratio of cost-benefit	1.96	0.27	7.32	< .001	1.44	2.49
Support for the rights of refugees	Parcel A	1.00	0.00			1.00	1.00
	Parcel B	0.89	0.03	32.17	< .001	0.83	0.94
	Parcel C	1.09	0.03	38.06	< .001	1.04	1.15
Realistic threat	Fear of increased crime rates due to refugees	1.00	0.00			1.00	1.00
	Fear of terrorist attacks by refugees	1.33	0.09	14.31	< .001	1.15	1.51
	Refugees take places at universities or jobs	0.68	0.06	11.00	< .001	0.56	0.81

**Table G**

*Regression coefficients in SEM model for perception of realistic threat for final model (model 2) in RCMs*

Predictor	<i>b</i>	$\beta$	<i>SE</i>	<i>z</i>	<i>p</i>	95% CI	
						Lower	Upper
Age	0.00	.06	0.00	1.45	.147	-0.00	0.01
Level of education	-0.08	-.11	0.03	-2.58	.010	-0.14	-0.02
Household income	-0.02	-.11	0.01	-2.31	.021	-0.04	-0.00
Political orientation	0.14	.22	0.03	4.26	< .001	0.07	0.20
Refugees as a part of the community in Croatia	-0.08	-.09	0.05	-1.78	.076	-0.18	0.01
Perception of the impact of migration on the socio-economic situation in Croatia	-0.02	-.01	0.10	-0.17	.868	-0.21	0.18
Support for the rights of refugees	-0.29	-.32	0.05	-5.52	< .001	-0.39	-0.19

**Table H**

*Variances and covariances of latent variables in SEM model for perception of realistic threat for final model (model 2) in RCMs*

Variable	Parameter estimate	SE	z	p	95% CI	
					Lower	Upper
Realistic threat	0.51	0.06	9.27	< .001	0.41	0.62
Perception of the impact of migration on the socio-economic situation in Croatia	0.15	0.04	4.06	< .001	0.08	0.23
Support for the rights of refugees	0.73	0.05	13.90	< .001	0.63	0.84
Perception of the impact of migration – Support for the rights	0.01	0.02	5.57	< .001	0.06	0.13

**Table I**

*Residual variances and covariances of observed variables in SEM model for perception of realistic threat for final model (model 2) in RCMs*

Variable	Parameter estimate	SE	z	p	95% CI	
					Lower	Upper
Increase in crime rates <sup>a</sup>	0.46	0.06	8.31	< .001	0.35	0.57
Terrorist attacks by refugees <sup>a</sup>	0.36	0.07	5.09	< .001	0.22	0.51
Refugees taking places at universities or jobs <sup>a</sup>	0.94	0.06	16.22	< .001	0.82	1.05
Increase of competition on the job market <sup>b</sup>	1.06	0.06	17.41	< .001	0.94	1.18
Reduction in shortage of workers <sup>b</sup>	0.71	0.06	12.78	< .001	0.60	0.82
General positive effect on economic growth <sup>b</sup>	0.14	0.07	2.02	.043	0.00	0.27
Positive ratio of costs and benefits <sup>b</sup>	0.92	0.08	11.30	< .001	0.76	1.08
Parcel A <sup>c</sup>	0.10	0.02	5.32	< .001	0.07	0.14
Parcel B <sup>c</sup>	0.22	0.02	10.98	< .001	0.18	0.26
Parcel C <sup>c</sup>	0.27	0.03	9.91	< .001	0.21	0.32
Refugees as a part of the community in Croatia	0.80	0.04	18.33	< .001	0.71	0.88
Age	181.46	7.05	25.75	< .001	167.65	195.28
Level of education	1.25	0.07	17.39	< .001	1.11	1.39
Household income	17.92	1.04	17.16	< .001	15.87	19.97
Political orientation	1.63	0.09	18.79	< .001	1.46	1.80
Increase of competition on the job market – Reduction in shortage of workers	0.29	0.05	6.55	< .001	0.20	0.38
Age – Level of education	-0.32	0.60	-0.53	.594	-1.51	0.86
Age – Household income	-12.28	2.52	-4.87	< .001	-17.23	-7.33

---

Age – Political orientation	-1.24	0.83	-1.49	.138	-2.87	0.40
Level of education – Household income	1.20	0.22	5.47	< .001	0.77	1.63
Level of education – Political orientation	-0.11	0.07	-1.67	.096	-0.24	0.02
Household income – Political orientation	0.63	0.28	2.24	.025	0.08	1.18

---

*Note.* a – factor is Realistic threat; b – factor is the Perception of impact of migration on socio-economic situation in Croatia; c – factor is the Support for the rights of refugees.

**Table J**

*Fit indicators for the SEM model predicting the perception of symbolic threat in receiving community members (RCMs)*

	Model 1	Model 2
AIC	20582.92	20468.84
BIC	20811.56	20679.89
$\chi^2$	254.93	148.85
<i>df</i>	38	42
<i>p</i>	<.001	<.001
CFI	0.908	0.955
TLI	0.876	0.939
RMSEA	0.098	0.065
RMSEA CI 90%		
Lower	0.086	0.054
Upper	0.109	0.077
SRMR	0.092	0.046
$R^2$	0.337	0.378

*Note.*  $N = 600$ . AIC – Akaike's Information Criteria; BIC – Bayesian Information Criteria; CFI – Comparative Fit Index; TLI – Tucker-Lewis Index; RMSEA – Root mean square error of approximation. CI – Confidence Interval; SRMR – Standardized root mean square residual

Estimation method: Maximum likelihood (ML); missing data handling: Full information maximum likelihood (FIML).



**Table K**

*Factor loadings in SEM model for perception of symbolic threat for final model (model 2) in RCMs*

Latent variable	Latent variable indicator	$\lambda$	SE	z	p	95% CI	
						Lower	Upper
Support for the rights of refugees	Parcel A	1.00	0.00			1.00	1.00
	Parcel B	0.89	0.03	33.11	< .001	0.84	0.95
	Parcel C	1.10	0.03	39.72	< .001	1.04	1.15
Symbolic threat	Refugees endanger our values and way of life	1.00	0.00			1.00	1.00
	Religious and moral beliefs are opposed to ours	0.64	0.04	14.52	< .001	0.55	0.73
	Beliefs of refugees about how society should function oppose ours	0.87	0.05	18.93	< .001	0.78	0.95

**Table L**

*Regression coefficients in SEM model for perception of symbolic threat for final model (model 2) in RCMs*

Predictor	<i>b</i>	$\beta$	<i>SE</i>	<i>z</i>	<i>p</i>	95% CI	
						Lower	Upper
Age	0.01	.11	0.00	2.70	.007	0.00	0.01
Level of education	-0.06	-.06	0.03	-1.73	.084	-0.13	0.01
Frequency of religious meetings	0.05	.04	0.06	0.80	.421	-0.07	0.16
Importance of religion	-0.02	-.02	0.05	-0.43	.670	-0.13	0.08
Political orientation	0.12	.15	0.04	3.11	.002	0.05	0.20
Perception of refugees as a part of the community in Croatia	-0.14	-.12	0.06	-2.52	.012	-0.21	-0.03
Support for the rights of refugees	-0.62	-.52	0.06	-10.56	<.001	-0.73	-0.50

**Table M**

*Variances and covariances of latent variables in SEM model for perception of symbolic threat for final model (model 2) in RCMs*

Variable	Parameter estimate	SE	z	p	95% CI	
					Lower	Upper
Symbolic threat	0.65	0.06	10.84	< .001	0.54	0.77
Support for the rights of refugees	0.74	0.05	13.67	< .001	0.63	0.85

**Table N**

*Residual variances and covariances of observed variables in SEM model for perception of symbolic threat for final model (model 2) in RCMs*

Variable	Parameter estimate	SE	z	p	95% CI	
					Lower	Upper
Refugees endanger our values and way of life <sup>a</sup>	0.73	0.08	9.70	< .001	0.58	0.88
Religious and moral beliefs are opposed to ours <sup>a</sup>	0.52	0.05	11.22	< .001	0.43	0.61
Beliefs of refugees about how the society should function oppose ours <sup>a</sup>	0.35	0.04	8.41	< .001	0.27	0.43
Parcel A <sup>b</sup>	0.11	0.02	5.50	< .001	0.07	0.14
Parcel B <sup>b</sup>	0.21	0.02	10.76	< .001	0.17	0.25
Parcel C <sup>b</sup>	0.27	0.03	10.04	< .001	0.22	0.32
Refugees as a part of the community in Croatia	0.80	0.04	18.33	< .001	0.71	0.88
Age	181.46	7.05	25.75	< .001	167.65	195.28
Level of education	1.24	0.07	17.40	< .001	1.10	1.39
Frequency of religious meetings	0.91	0.06	15.43	< .001	0.80	1.03
Importance of religion	1.24	0.06	20.05	< .001	1.12	1.36
Political orientation	1.62	0.09	18.71	< .001	1.45	1.79
Age – Level of education	-0.33	0.61	-0.55	.582	-1.52	0.85
Age – Frequency of religious meetings	0.44	0.59	0.74	.459	-0.72	1.59
Age – Importance of religion	1.76	0.66	2.65	.008	0.46	3.06
Age – Political orientation	-0.57	0.82	-0.70	.485	-2.18	1.03
Level of education – Frequency of religious meetings	0.13	0.05	2.63	.009	0.03	0.23
Level of education – Importance of religion	0.00	0.06	0.05	.960	-0.11	0.11

---

Level of education – Political orientation	-0.11	0.07	-1.67	.096	-0.24	0.02
Frequency of religious meetings – Importance of religion	0.70	0.06	12.48	< .001	0.59	0.81
Frequency of religious meetings – Political orientation	0.37	0.06	6.22	< .001	0.26	0.49
Importance of religious meetings – Political orientation	0.54	0.08	7.00	< .001	0.39	0.70

---

*Note.* a – factor is Symbolic threat; b – factor is the Support for the rights of refugees.





Research Article

# Psychological traits of League of Legends players who prefer different positions and roles in the game

Nemanja Šajinović <sup>1</sup>✉ , Bojana Bodroža <sup>2</sup> 

<sup>1</sup> Faculty of Law and Business Studies Dr Lazar Vrkatić, Serbia

<sup>2</sup> Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia

## ABSTRACT

Understanding the psychological characteristics of video game players provides game designers with greater opportunities to develop personalized gaming experiences. In this light, this study examined the relationships between preferred roles and positions in the video game League of Legends (LoL) and players' indicated basic personality traits, empathy, and social rank styles. The study involved 3220 LoL players from around the world. Canonical covariance analysis was applied, with the left set of variables comprising preferences for positions and roles in LoL (Top, Mid, Jungle, Bot, Support positions; Tank, Fighter, Assassin, Mage, Marksman, and Support roles), and the right set representing personality traits from the HEXACO model, dimensions of empathy, and social rank styles. Three pairs of significant quasi-canonical functions were extracted. The structure of the first pair of quasi-canonical functions suggests that preferences for the Fighter and Assassin roles and, to a lesser extent, the Jungle position, as well as for avoidance of the Support role, are associated with a lack of affective resonance and honesty/humility and high affective dissonance, emotional stability, ruthless self-promotion, coalition avoidance, and uncooperativeness. The second pair of quasi-canonical functions indicates that preferences for the Jungle and Support positions and the Support role, as well as for avoidance of the Top position, are linked to dominant leadership, coalition building, extraversion, cognitive empathy, and openness to experience. The third pair of quasi-canonical functions implies that preferences for the Mid

---

position and the Mage and Marksman roles are associated with ruthless self-promotion, emotional instability, a lack of honesty/humility, and affective dissonance. The results of this study suggest that personality characteristics are grouped differently in the latent space depending on which style of play individuals prefer, indicating that there are gaming patterns associated with specific psychological personality profiles.

*Keywords:* League of Legends, HEXACO, empathy, social rank styles

---

UDK: 159.923:795

DOI: 10.19090/pp.v17i4.2535

Received: 23.02.2024.

Revised: 02.10.2024.

Accepted: 05.11.2024.



Copyright © 2024 The Author(s).

This is an open access article distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

---

✉ Corresponding author email: [sajinovicnemanja@gmail.com](mailto:sajinovicnemanja@gmail.com)



## Introduction

The global prevalence of video games is currently best illustrated by data documenting that there are over 2.9 billion players in the world and that the market value of video games has been recently estimated at 178.73 billion dollars (in 2021), with 85% of the revenue generated through games that are free, a category in which League of Legends (abbr. LoL) is included (Video Game Industry Statistics, Trends and Data In 2023, n.d.). Resultantly, this ever-expanding segment has become an increasing focus of research in numerous fields, including Psychology. Yet this growth of research into video games in recent years has not led to a consensus on how to approach researching video games.

In psychological research, video games are often divided into: actions, role-playing, simulations, and strategies (Arsenault, 2009; Krzywinska & Brown, 2015; Qin, Rau, & Salvendy, 2009 according to Braun et al., 2016). The problem with such classification is that the division is made according to the most basic mechanics of video games, with other essential elements that differentiate video games at the core, as well as the players themselves, left out and merged into one category. For example, according to this classification, the genres known as massively multiplayer role-playing game (abbr. MMORPG) and role-playing game (abbr. RPG) are typically classified into one category called role-playing games despite being fundamentally different. MMORPGs inherently imply internet connection, competition with other players, and often necessary cooperation with other players since, due to the essential mechanics of the games, the individual player is not able to do certain functions independently. In contrast, RPG games, as a rule, are played independently and do not require an Internet connection, while the player depends exclusively on him/herself and does not interact with other players.

Multiplayer online battle arenas (abbr. MOBAs) are currently one of the most popular and successful types of computer video games (Clement, 2023). Due to their popularity, competitive nature, and complex team strategies, they have many similarities with traditional sports and as such form a suitable ground

---

for psychological research. Currently, the most popular MOBA in the world is LoL and for this reason it was chosen as the subject of this study. Accordingly, the primary goal of this research was to examine the relationships between preferred positions and roles in LoL and the corresponding players' indicated social rank styles, empathy, and basic personality characteristics.

## League of Legends

League of Legends is a team-based, strategy game where two teams of five players each control different heroes who fight to destroy each other's base to win the match. Each hero that players choose has their own weaknesses and strengths, as well as distinctive abilities, and therefore choosing a specific hero is an important aspect of the game. Towards achieving victory, teams must select and manipulate heroes whose different abilities allow them to fulfill a specific role according to the strategy and tactics they have decided or judged to have the best chance of winning the current match. The MOBA genre is itself a combination of action game, role-playing game, and real-time strategy game, which means that LoL, belonging to this genre, has elements of several genres of video games. This makes it highly suitable for initial analysis in the context of videogame research, as it allows for comparisons involving seemingly very different video game types, their mechanics, and elements.

As previously expressed, the archetypes found in multiplayer games are not only characteristic of LoL and the larger MOBA genre – in different games there are different, unique, archetypes. Yet the authors' assumption is that no matter how many roles, positions, or archetypes there are in different video games, they can be fundamentally reduced to three essential team roles, and that players who prefer one of these three, regardless of the genre and type of game, exhibit, and may possess, similar characteristics. The basic, primary roles, i.e., archetypes, are: Tank - the tank's role is to take damage instead of his party and to protect his teammates from enemy attacks; Healer - the role of the healer is to heal the group when they are injured or when they receive damage that the Tank failed to contain and their primary job is to keep their teammates alive until the enemy is defeated; Damage dealer (damage dealer, more often called

DPS - damage per second) – the DPS's job is to kill the enemy. In LoL, the Tank role is played by the characters Tank and Fighter, the Healer role is played by the Support character, and the role of DPS is played by all other titles - Mage, Assassin, and Marksman. Because LoL is designed as a game that involves complementary positions and roles, it can be reasonably assumed that a Tank or Fighter would typically represent the Top position, that the Mid position could be occupied by a Jungle Assassin, Tank, or Fighter, that in the position of Bot would be the character types Mage or Assassin, and that in the position of support would be found the titles Marksman and Support.

This paper starts from the assumption that there is a relationship between the preference of the above positions and roles in video games and the corresponding players' indicated social rank styles, empathy, and personality traits.

## Empathy and League of Legends

Contemporary research on empathy (Shamay-Tsoory et. al., 2009) distinguishes two components of empathy - affective and cognitive. The cognitive aspect refers to the ability to recognize and understand other people's emotions, while the affective element refers to an adequate emotional response to those perceived feelings and thoughts (Dadds et al., 2008). Vachon & Laynam (2016) have claimed that empathy involves the cognitive processing of emotional arousal, as well as the ability to respond to, or resonate with, another's emotions. However, the capacity for empathy can also be determined by specific aberrations of empathy, or dissonance, which implies a paradoxical experience in the expression of emotions. Therefore, Vachon & Lynam (2016) introduced the ACME model into psychology, which also includes affective dissonance as a domain of empathy. Thus, the ACME model implies three components of empathy: cognitive empathy, which is defined as the ability to understand the emotional state and perspective of other people; affective empathy, which is defined as an individual's ability to vicariously feel the emotions of others (Reniers et. al., 2011); and affective dissonance, which is

defined as feeling a valence-incongruent emotional response, such as feeling pain when other people feel pleasure, or feeling pleasure when other people feel pain (Levitan & Vachon, 2021).

Empathy has already been linked to video game playing in the broadest sense and research has shown that playing violent video games reduces empathy (Funk et al., 2003). Relatedly, Greitemeyer (2010) conducted an experimental study in which he found that playing prosocial games leads to an increase in interpersonal empathy and a decrease in the feeling of pleasure caused by another's misfortune (Greitemeyer et. al., 2010).

As it is apparent that no previous research has been carried out directly linking LoL and empathy, the authors' assumption was that all three domains of empathy from the ACME model play a significant role in individuals' preference for positions and roles in LoL. For example, players who prefer to play the Jungle position would likely benefit more from possessing developed cognitive empathy than players who prefer to play the Top position, as those in the Jungle position are generally expected to cooperate more with the team.

## Social Rank Styles and League of Legends

Competitive behavior is usually not driven by an underlying desire to harm others, yet at the same time, the realization of one person's intention usually prevents the realization of another person's intention (Mitić, 2017). In contrast, cooperation, which is also an essential part of team games, is defined as joint work to achieve goals shared by all participants; individuals work collaboratively to maximize their own productivity and achievement, as well as the productivity and achievement of other people (Johnson & Johnson, 1989). In this context, Zuroff et al. constructed a social rank style questionnaire (abbr. RSPQ; Zuroff et al., 2010), which contains three nearly independent dimensions: *Dominant leadership* - a competitive style of behavior, indicative of a person's disposition to strive for leadership positions and to do so in a dominant, assertive, and confident manner; *Coalition-building* - a cooperative style of behavior, implying a disposition towards fostering coalition, partnership relations, cooperation, respect for other people's points of view, consultation

when making decisions, and creating compromises; *Ruthless self-advancement* - an individualistic style of behavior, with a tendency towards personal advancement without regard for others. A series of confirmatory factor studies confirmed that the RSPQ has a robust factor structure and that it is grounded in theoretical expectations (Ronen & Zuroff 2017; Mitić et al., 2018). Also, research on the connection of RSPQ with features of the five-factor model has shown that the dimensions of RSPQ are not redundant with these traits (Mitić, 2017), which is particularly significant in the context of the goal of this study as it implies that these two phenomena do not have considerable overlaps.

In a game like LoL, players have the choice to exhibit all three social rank styles, and the researchers hypothesized that players who prefer different roles and positions would associate with different, corresponding social rank styles. The amount of resources players can collect during the relevant match itself is proportional to the strength of their hero, while the essential design of the game leaves the players themselves to decide on the amount and manner of interaction with their teammates. It is possible to insist that all resources go to one player, and it is also possible to share these resources.

## Personality traits, HEXACO model and the League of Legends

In video game research, personality differences between players and non-players have been widely examined (Abbasi et al., 2022; Braun et al., 2016), as well as differences among players who favor specific game genres (Peever et al., 2012; Zeigler-Hill & Monica, 2015). Wang et al. (2019) examined the relationship between MOBA users play styles and the Big-5 personality traits. His results indicate that in MOBA games, high Agreeableness correlates with better cooperation, leading to fewer deaths and higher winning rates. Conscientious players favor champions with strong control abilities, aiding in effective management of risky situations. Emotional stability is associated with selecting champions with high control and utility ratings, resulting in more kills and lower death rates. Extroverted players are inclined towards champions with high damage and mobility ratings, leading to successful kills and an interest in

---

exploring a broad range of champions. Lastly, high Openness is linked to curiosity and creativity, reflected in the selection of versatile champions with strong control, damage, and utility ratings (Wang et al., 2019).

In this study, we chose to rely on the HEXACO personality model, which has a notable overlap with the Big Five/FFM. Thielman et al. (2022) suggest that while there are some differences, these models capture much of the same core personality characteristics. The HEXACO model is a lexical personality framework that includes six basic personality traits: Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience (Ashton & Lee, 2007; 2009). The choice of the HEXACO model for this study is based on its inclusion of Honesty-Humility, a trait not encompassed by traditional models like the Five-Factor Model, which allows for a broader examination of personality (Lozić et al., 2022) in relation to in-game roles and behaviors. For instance, we could assume that players who prefer the Marksman archetype would likely exhibit low levels of Honesty-Humility, characterized by a strong sense of self-importance, as gameplay strategies often revolve around protecting the Marksman as the primary late-game carry. However, no studies have specifically investigated the association between HEXACO traits and the roles players prefer in *League of Legends*.

## Research aims

The aim of this study was to determine whether players who prefer different positions and roles in the League of Legends game are characterized by certain domains of empathy from the ACME model, social rank styles, and personality traits from the HEXACO model. Based on the description of what each position and role in the game entails and the theoretical definitions of the phenomena measured in this study, the following hypotheses were formulated:

H1: It was expected that a pattern of associations would be found between the preference for the Bot and Mid positions, Marksman, Mage, and Assassin roles, (which correspond to the general DPS archetype) and the following elements: positive associations with affective dissonance from the

ACME model; positive associations with ruthless self-advancement and avoidance of coalition building from the social rank styles; and low honesty-humility and low cooperativeness from the HEXACO model.

H2: A preference for the position of Supporter and the role of Support, corresponding to the general archetype of Healer, would display the following associations: positive associations with cognitive empathy and affective resonance from the ACME model; positive associations with coalition building from the styles of social rank; and positive associations with extraversion, conscientiousness, and cooperation as personality characteristics from the HEXACO model, alongside low emotionality.

H3: A preference for the Jungle and Top positions and the role of Tank and Fighter, corresponding to the general archetype of Tank, would associate as follows: positively with cognitive empathy from the ACME model; positively with dominant leadership and coalition building from the styles of social rank; and positively with the personality characteristics of extraversion and cooperation from the HEXACO model, alongside low emotionality and openness to experience.

## Method

### Sample

The survey was conducted in July 2021 via the Internet. A set of questionnaires was created through the SoSci survey website and shared on the Reddit website, more precisely on the League of Legends subreddit. The questionnaires were in English, and there were a total of 8,967 clicks from different parts of the world on the link leading to the battery, including accidental clicks. Out of 8,967 respondents, 3,232 submitted their answers. The minimum age reported by respondents was 0, due to a data entry error, and the maximum age was 44. Although it was necessary for the respondents to confirm that they were 18 years old (or if not, that they had been given parental consent) to access the questionnaires, the researchers decided to exclude all

respondents who identified themselves as under the age of 13, as the general terms and conditions when accessing this game require users to be 13 or older. The final sample consisted of 3,220 respondents with an average age of 23 years (range 13–44;  $SD = 4.17$ ). The data on gender was not collected. The research was approved by the ethics committee of the Department of Psychology at the University of Novi Sad.

## Instruments

### *Position and role preference in League of Legends*

The preference for positions and roles in *League of Legends* was measured through two surveys developed by the authors for this research. Both surveys contained five-point Likert-type questions, ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). For instance, participants were asked to rate statements such as, "When I'm playing alone, I prefer to play top lane" and "When I'm playing alone, I prefer to play tank." The full list of survey items included preferences for specific positions (e.g., top, mid, jungle, bot, support) and roles (e.g., tank, fighter, assassin, mage, marksman, support). Based on these responses, individual preferences for certain positions and roles were determined, without calculating total scores.

### *HEXACO-PI-R scale*

To measure basic personality traits, the *HEXACO-PI-R scale* (Ashton & Lee, 2009) was used. This scale comprises 60 five-point Likert-type statements, with 10 statements measuring each personality dimension: Honesty-Humility, Emotionality, Extraversion, Cooperativeness, Conscientiousness and Openness to experience (Lee & Ashton, 2004). The HEXACO personality inventory on this sample displayed satisfactory internal consistency:  $\alpha_H = .74$ ;  $\alpha_E = .80$ ;  $\alpha_X = .82$ ;  $\alpha_A = .76$ ;  $\alpha_C = .78$ ;  $\alpha_O = .73$ .

### *Affective and Cognitive Measure of Empathy – ACME*

Empathy was measured by the scale *Affective and Cognitive Measure of Empathy – ACME* (Vachon & Lynam, 2016), which contains 36 five-point



Likert-type statements, operationalized by the subscales cognitive empathy ( $\alpha=.93$ ), affective resonance ( $\alpha=.86$ ), and affective dissonance ( $\alpha=.85$ ).

#### *Rank Style with Peers Questionnaire – RSPQ*

Social rank styles were measured by the *Rank Style with Peers Questionnaire – RSPQ* (Zuroff et al., 2010), which is a five-point Likert-type scale that is divided into three scales - Dominant leadership ( $\alpha=.87$ ), Coalition-building ( $\alpha=.78$ ), and Ruthless self-advancement ( $\alpha=.70$ ). A higher score on the scale means that a given style of social competition is expressed to a greater extent.

All scale scores were calculated by averaging the sum of all items (where applicable, reversely worded items were first recoded), providing composite scores for each variable.

#### Data Analysis

Statistical analyses were conducted using the program SPSS 26. Syntax QCCR version 1.0 for quasi-canonical correlation analysis (QCCA) was used for data analysis (Knežević & Momirović, 1996). QCCA (also known as the canonical analysis of covariance) allows researchers to examine the relationship between two sets of variables, by extracting the pairs of latent variables – quasi-canonical functions (QCF), which are extracted so as to optimize the explained variance from both sets of variables. Since in this study we have two sets of variables – one consisting of preference for LoL positions and role and the other consisting of personality variables, QCCA was a method of choice. As opposed to canonical correlation analysis, QCCA allows pair of QCF to be mutually correlated i.e. for the next extracted pair of functions to explain the portion of variance already explained by the previous pair(s) of functions. In the context of LoL, that means that we did not expect players to have a preference for only one player archetype while discarding all other archetypes. It is more common for players to try and play different positions and roles, but to prefer one of the archetypes best. Allowing for mutual correlations between the QCFs enabled us to capture the players' exploration of different roles while still having a primary preference.

## Results

Descriptive statistics of the questionnaires and scales used in this research were shown in Table 1. Table 1 demonstrates that the skewness and kurtosis levels of all variables do not exceed  $\pm 1.5$ , indicating no significant deviation from the normal distribution. Table A in the Supplementary materials provides the intercorrelations among the study variables.

**Table 1**

*Descriptive indicators of variables*

Variables	Min.	Max.	<i>M</i>	<i>SD</i>	Skew.	Kurt.
Top	1.00	5.00	3.04	1.46	-0.11	-1.38
Mid	1.00	5.00	3.18	1.38	-0.26	-1.17
Jungle	1.00	5.00	2.48	1.48	0.45	-1.25
Bot	1.00	5.00	2.70	1.44	.020	-1.36
Support	1.00	5.00	3.11	1.50	-0.15	-1.41
Tank	1.00	5.00	3.01	1.35	-0.13	-1.21
Fighter	1.00	5.00	3.37	1.30	-0.45	-0.91
Assassin	1.00	5.00	2.74	1.36	.017	-1.22
Mage	1.00	5.00	3.42	1.23	-0.51	-0.67
Marksman	1.00	5.00	2.94	1.43	-0.01	-1.35
Support	1.00	5.00	3.15	1.45	-0.20	-1.31
Cognitive empathy	1.00	5.00	3.53	0.78	-0.62	0.17
Affective resonance	1.08	5.00	3.98	0.61	-0.74	0.74
Affective dissonance	1.00	5.00	1.97	0.68	0.73	0.29
Dominant leadership	1.00	5.00	3.35	0.92	-0.42	-0.18
Coalition-building	1.00	5.00	4.03	0.53	-0.53	1.24
Ruthless self-advancement	1.00	5.00	2.86	0.73	0.17	0.05
Honesty–humility	1.10	5.00	3.37	0.67	-0.26	-0.07
Emotionality	1.00	4.90	2.97	0.70	-0.02	-0.34
Extraversion	1.00	5.00	2.76	0.75	0.14	-0.35
Agreeableness	1.00	5.00	3.20	0.65	-0.21	-0.27
Conscientiousness	1.20	5.00	3.25	0.65	-0.10	-0.25
Openness to experience	1.40	5.00	3.49	0.64	-0.24	-0.26

*Note.* Min. – Minimum; Max. – Maximum; Skew. – Skewness; Kurt. – Kurtosis.

To test the hypotheses, QCCA was applied, where the left set variables consisted of the preferences of positions and roles in LoL, and the right set included the personality traits from the HEXACO model, the three dimensions of empathy, and social rank styles.

**Table 2**

*Quasi-canonical correlations and significance tests of extracted pairs of quasi-canonical functions*

Function	$ro$	$ro^2$	$F$	$p$
1	.22	.05	155.99	.00
2	.16	.02	79.02	.00
3	.10	.01	34.92	.00

*Note.* Rho ( $ro$ ) - quasi-canonical correlation coefficient; Squared Rho ( $ro^2$ ) - the proportion of variance explained by the pair of quasi-canonical functions.

The QCCA identified three significant QCFs (Table 2). Table 3 presents the quasi-canonical coefficients ( $\beta$ ) and saturations ( $r$ ) for the three extracted QCFs. While a cut-off value of .30 is typically recommended (Costello & Osborne, 2005), this study employed a stricter threshold of .40. This higher cut-off was chosen due to the large number of variables, ensuring that only the most significant contributors to each function were highlighted for clearer interpretation. The first QCF shows that players who prefer the Jungle position and the Fighter and Assassin roles, while avoiding the Support position and role, tend to avoid cooperation, pursue ruthless self-advancement, exhibit low emotionality and honesty, and display higher affective dissonance and lower affective resonance. The second QCF indicates that players who prefer both the Jungle and Support positions as well as the Support role, while avoiding the Top position, exhibit higher cognitive empathy, extraversion, openness to new experiences, and a tendency toward coalition-building and dominant leadership. The third QCF reveals that players favoring the Mid position and the Mage and

Marksmen roles are characterized by low honesty-humility, high emotionality, a drive for ruthless self-advancement, and greater affective dissonance.

**Table 3**

*Quasi-canonical coefficients ( $\beta$ ) and quasi-canonical saturations ( $r$ ) on three extracted quasi-canonical functions*

Variable	Function 1		Function 2		Function 3	
	$\beta$	$r$	$\beta$	$r$	$\beta$	$r$
Left set						
Top	.13	.37	-.34	<b>-.43</b>	.05	-.03
Mid	.17	.33	.06	.01	<b>.56</b>	<b>.76</b>
Jungle	.31	<b>.44</b>	<b>.72</b>	<b>.65</b>	<b>-.41</b>	-.38
Bot	-.14	-.30	.17	.20	.18	.37
Support	-.38	<b>-.79</b>	.30	<b>.44</b>	.04	-.05
Tank	-.25	-.23	.17	.15	-.15	-.33
Fighter	.36	<b>.64</b>	.11	-.02	-.01	-.10
Assassin	<b>.49</b>	<b>.66</b>	.27	.28	<b>.40</b>	<b>.40</b>
Mage	-.20	-.15	.20	.25	<b>.47</b>	<b>.70</b>
Marksmen	-.11	-.21	.11	.17	.27	<b>.44</b>
Support	<b>-.46</b>	<b>-.80</b>	.29	<b>.43</b>	.09	-.03
Right set						
Cognitive empathy	.12	.03	.39	<b>.60</b>	.29	.16
Affective resonance	-.29	<b>-.67</b>	.12	.37	-.06	-.05
Affective dissonance	.39	<b>.71</b>	-.01	-.17	.23	<b>.40</b>
Dominant leadership	.30	.33	<b>.43</b>	<b>.74</b>	-.20	-.20
Coalition-building	-.23	<b>-.43</b>	.32	<b>.52</b>	.24	.07
Ruthless self-advancement	.31	<b>.62</b>	.07	.04	<b>.54</b>	<b>.62</b>
Honesty–humility	<b>-.40</b>	<b>-.65</b>	.04	.03	-.28	<b>-.50</b>
Emotionality	-.39	<b>-.45</b>	-.06	-.09	<b>.43</b>	<b>.45</b>
Extraversion	.20	.24	<b>.47</b>	<b>.71</b>	<b>-.40</b>	-.37
Agreeableness	-.22	<b>-.46</b>	.00	.10	.08	-.12
Conscientiousness	-.24	-.22	.30	<b>.40</b>	-.06	-.19
Openness to experience	-.25	-.22	<b>.48</b>	<b>.56</b>	.20	.14

*Note.* Values  $\geq .40$  are marked in bold.

---

## Discussion

The aim of this study was to determine whether players who prefer different positions and roles in the game League of Legends are characterized by certain domains of empathy from the ACME model, social rank styles, and personality traits from the HEXACO model. Based on the design of this game, representative of similar multiplayer games, it was expected that three archetypal roles in multiplayer video games would be distinguished from the domain of preferences for different positions and roles, which would be characterized by a specific set of personality characteristics.

According to H1, a positive pattern of association was expected between the Bot and Mid positions, the Marksman, Mage, and Assassin roles, which correspond to the general DPS archetype, and affective dissonance, ruthless self-advancement, avoidance of coalition building, and the personality characteristics of low honesty-humility and low cooperation (agreeableness). This hypothesis is supported by the third QCF, which indicated that players reporting a preference for the position of Mid and the roles of Mage and Marksmen were distinguished by the following personality characteristics: pronounced affective dissonance, ruthless self-advancement, emotionality, and low honesty-humility. It is important to note that the preference for the Bot position is mostly found in the latent space of this function, but due to the stricter cut-off criteria for quasi-canonical saturation adopted in this study, this position did not belong to the distinct profile in this context.

Inflicting damage in LoL is correlated to the amount of resources a player can collect during a match. Therefore, in order for these players to fulfill such a primary role on their team, they must gain the largest amounts of resources possible, which can often be obtained by greedily stealing resources from teammates, behavior that is consistent with ruthless self-advancement and low honesty-humility (Ashton & Lee, 2008; Mitić et al., 2018). Here, it should be highlighted that one of the essential differences between the Fighter, Assassin, and Tank roles, on the one hand, and the Mage and Marksman roles, on the other, is the way they deal damage – more precisely, from what distance

---

they deal damage to enemy heroes. Traditionally, the Marksman and Mage deal ranged damage, while the other roles deal melee damage.

The association of emotionality with the roles of Mage and Marksman can be explained by the fact that these roles suffer the most when receiving damage, often being quickly removed from the playing field, even with a small amount of damage. Therefore, players in these roles might be afraid to receive damage and they heavily depend on their teammates to protect them. Ashton et al. (2014) suggest that those with high emotionality often experience fear of physical danger, anxiety in stressful situations, and a need for emotional and social support from their teammates, which aligns well with the behaviors observed in these in-game roles. From the description of these roles, it is also clear that their essence is to remove the enemy heroes from the playing field as soon as possible and to save the lives of their heroes while performing that task. Based on this, the pronounced affective dissonance found to be associated with these roles makes theoretical sense, for if these heroes do their job well enemy heroes are prevented from doing their job. Essentially, the nature of the game itself inclines those who prefer these roles to feel the opposite way from how their enemies feel, i.e., they rejoice in the misfortune of their opponents (Vachon & Laynam, 2016).

H1 is also supported by the first QCF, which describes the player profile characterized by a preference for the Jungle position and the Fighter and Assassin roles, while avoiding the Support position and Support role. The results indicate that such player profiles were characterized by pronounced affective dissonance and ruthless self-advancement and low honesty-humility, which can likely be explained as operating in much the same way as those positions in the third QCF, as in these preferred roles we also found a negative association with affective resonance, avoidance of building coalitions, and a lack of cooperativeness. From the description of the role of the Assassin, it should be noted that their task in the match is to independently remove the primary enemy target before the team fight actually begins, therefore the Assassin heroes do not cooperate directly with their team or build coalitions (Ashton & Lee, 2008; Zuroff et al., 2010).

These findings align with Delhove and Greitemeyer's (2020) observation that more aggressive hero choices, such as *Overwatch's* Offense role, are linked to darker personality traits, including lower empathy and higher aggression. The preference for roles like Assassin and Fighter in *League of Legends*, which are similarly aggressive in nature, also reflects a lack of cooperation and a tendency toward ruthless self-advancement. Conversely, Support heroes in *Overwatch* showed higher empathy and agreeableness, similar to the characteristics associated with the Support role in *LoL* in this study (Delhove & Greitemeyer, 2020).

This could also explain why individuals who showed preference for this role also showed a non-preference towards the position and the of Support, which are fundamentally characterized by the relatively opposite characteristics of personality, empathy, and social rank styles, which will be discussed more in the next section. The Fighter belonging to this grouping can be explained by this role's general proclivity to not need teammates to keep them alive while they do damage to enemy players, unlike the Mage and the Marksman who saturate the third function. What the Fighter and Assassin heroes have in common is that their damage is dealt at close range, requiring them to engage in hand-to-hand combat. Individuals with low emotionality are not easily deterred by the prospect of physical harm, feel little worry in stressful situations, and are less likely to share concerns with others, aligning with the demands of facing close-range combat without fear. Additionally, these traits imply emotional detachment and independence, further reflecting the nature of characters that engage in high-risk combat without hesitation (Ashton & Lee, 2008). Players who prefer these roles often thrive in life on the knife's edge, embracing the all-or-nothing nature of fights where they either eliminate the priority target or leave their team at a disadvantage.

H2 hypothesizes that the preference for the Support position and role, which align with the general archetype of the Healer, will be characterized by cognitive empathy, affective resonance, coalition-building, and the personality traits of extraversion, conscientiousness, and agreeableness, alongside low emotionality. H2 is supported by the first and second QCF. The second QCF

---

describes the profile of the player who expresses the preference for the position and role of Support, as well as the preference for the Jungle position and the avoidance of the Top position.

Conscientious players are more likely to choose champions with strong control abilities, allowing them to manage high-pressure situations effectively. This finding supports the association between the conscientious trait and roles like Jungle and Support, where players must manage neutral objectives, disrupt the enemy's strategy, and help their team strategically. Although these roles might not receive the same recognition as damage-dealing roles, they often secure victories through disruption and control (Wang et al., 2019).

It seems theoretically logical that the Jungle position belongs to this space, as players in this position, by the design of the position, do not have their own lane, but help other lanes to win. On the other hand, Top players are typically playing farthest afield from the other teammates, and thus were included in this grouping as a position typically avoided by those with a preference for the archetype of Healer.

This finding is also consistent with Worth and Book's (2014) research on *World of Warcraft* (WoW), where helping behaviors were found to correlate strongly with traits like high Agreeableness and Emotionality. In WoW, players who engage in cooperative and helping roles are often outgoing, patient, and empathetic, much like the *League of Legends* Support role. The role requires both emotional and social support skills, as players must seek out situations in which they can assist their teammates. These shared traits across games reflect the underlying personality characteristics that align with cooperative playstyles, emphasizing the importance of coalition-building and empathy in such roles (Worth & Book, 2014).

As already stated, while the Jungle position is not traditionally to strengthen and keep friendly heroes alive, their role is to help teammates, through removing or assisting in the removal of the enemy player from the game rather than having their teammate removed, or through providing additional resources through neutral objectives. Essentially, they make a fight which would be a one-against-one battle into a two-against-one affair and thus provide a better chance for their teammate to win. This aligns with the characteristic of



coalition-building (Zuroff et. al., 2010) with their teammates, which was shown to characterize the players who prefer this position.

The Jungle and Support positions, by game design, have the smallest source of resources and therefore the vitality and impact of their heroes' neutral objectives that give various bonuses to the entire team are of special importance. In order to ensure their own relevance in the match, they are most likely the ones who initiate when and how to assume a neutral objective, which is in line with the traits of dominant leadership and extraversion (Zettler et. al., 2020; Zuroff et. al., 2010). Another consequence of their possessing the smallest source of resources is that it opens up additional space, and the inclination and even obligation, to bring advantage to their team in creative, innovative, and unconventional ways, which is in line with the emphasis on openness to experience (Zettler et. al., 2020).

H2 was additionally confirmed by the first QCF and these results create space for additional theoretical considerations of video game playing style. Namely, the results of this research indicate that the characteristics of those players who reported preferring the positions and roles characteristic of the archetypal role of the Healer are quite opposite to those of the players who indicated preferring the positions and roles characteristic of the archetypal role of the DPS, not only in terms of the style and way of playing of these two archetypal roles but also regarding personality traits. In H2, we assumed that associations between the preference for the position and role of Support and cognitive empathy, affective resonance, coalition-building, extraversion, conscientiousness, agreeableness, and low emotionality. The first QCF indeed supports this, but primarily through the negative associations observed: instead of these traits aligning with a preference for these positions and roles, they were associated with their avoidance: instead of aligning with high affective resonance, these positions and roles were aligned low scores; instead of building coalitions, they demonstrated a tendency to avoid building coalitions; and instead of agreeableness/cooperation, a lack of cooperation stood out. Relatedly, cognitive empathy, extraversion, and conscientiousness were not

---

negatively associated with the Support function, while low emotionality was shown to be characteristic of both types of player preference.

According to H3, the preference for the Jungle and Top positions, and the Tank and Fighter roles, which correspond to the general Tank archetype, is expected to be related to cognitive empathy, dominant leadership, and coalition-building, alongside the personality traits of extraversion, agreeableness, emotionality, and openness to experience. This hypotheses, however, was refuted in its entirety. Not only was the association of these positions and roles not distinguished in the latent space of these variables, but the preference for the role of Tank and the preference for the position of Top were not shown to significantly saturate any function. The results of this study indicate that there is no typical psychological profile that could be associated with a preference for these roles and positions. In LoL, the function of Tank and Fighter in the team is very similar, so, essentially, there is not much difference between the two roles, as it appears in other games.

To summarize, the second QCF in this research aligns with the archetypal Healer role commonly seen in multiplayer video games. In contrast, the first QCF reflects the opposite of this archetype, while the first and third QCFs together cluster player styles and preferences typically associated with the DPS archetype. In other games such as World of Warcraft and Final Fantasy IX there is a clear difference between melee DPS and ranged DPS roles, but the researchers had assumed that this difference would not be significant to register in the LoL game, which is part of the MOBA genre. However, this difference did prove to be significant, as two separate functions corresponding to these roles were singled out.

The results of this study indicate that personality characteristics are grouped differently in the latent space depending on which game style a person prefers; that is, there are patterns of playing video games that are associated with specific psychological personality profiles. The significant contribution of this research is reflected in that it stands as a different approach to video game research and represents an initial step in the further development of hypotheses and potential taxonomies of video game playing styles.

---

## Limitations and future directions

A key limitation of this research is its focus on a single video game and genre, limiting the generalizability of the findings. Until these results are replicated in other MOBAs, such as Dota 2, or across different video game genres like MMORPGs, they cannot be extended beyond the scope of League of Legends. Future research should explore similar dynamics in other games and genres to validate these findings. Additionally, considering the global nature of video gaming, examining cultural differences in the relationship between game preferences and personality traits could provide valuable insights. Different cultures may emphasize individual performance or teamwork, influencing role preferences and gameplay approaches. Cross-cultural studies could further explore how personality traits, such as extraversion and agreeableness, manifest across different regions and cultural contexts. Incorporating more objective, data-driven methods by analyzing in-game behavioral data, such as role selection, win rates, and cooperation levels, could also enhance future research. These metrics, combined with self-reported personality measures, would reduce bias and provide more accurate behavioral insights. Additionally, exploring role-switching behavior may reveal whether players who frequently change roles possess distinct personality traits compared to those who consistently play one role, shedding light on the flexibility and adaptability of players in team-based games. Finally, in this study we did not consider gender differences in playing styles in relation to personality characteristics. As many research findings indicate that men and women approach gaming differently (see e.g. Vetri et al., 2014), the moderating role of gender in game playing should be taken into account in future studies.

### *Conflict of Interest*

The authors have no conflicts of interest to declare.

---

### Data availability statement

Data from the study are available at [https://osf.io/gqhxhd/?view\\_only=3a14625da4294a47b2476af180890890](https://osf.io/gqhxhd/?view_only=3a14625da4294a47b2476af180890890).

### References

- Abbasi, A. Z., Ting, D. H., Hlavacs, H., Wilson, B., Rehman, U., & Arsalan, A. (2022). Personality differences between videogame vs. non-videogame consumers using the HEXACO model. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues*, 41(5), 2733–2746. <https://doi.org/10.1007/s12144-020-00793-2>
- Ashton, M. C., & Lee, K. (2007). Empirical, theoretical, and practical advantages of the HEXACO model of personality structure. *Personality and Social Psychology Review*, 11(2), 150-166. <https://doi.org/10.1177/1088868306294907>
- Ashton, M. C., & Lee, K. (2008). The HEXACO model of personality structure and the importance of the H factor. *Social and Personality Psychology Compass*, 2(5), 1952-1962. <https://doi.org/10.1111/j.1751-9004.2008.00134.x>
- Ashton, M. C., & Lee, K. (2009). The HEXACO–60: A short measure of the major dimensions of personality. *Journal of Personality Assessment*, 91(4), 340-345. <https://doi.org/10.1080/00223890902935878>
- Ashton, M. C., Lee, K., & De Vries, R. E. (2014). The HEXACO Honesty-Humility, Agreeableness, and Emotionality factors: A review of research and theory. *Personality and Social Psychology Review*, 18(2), 139-152. <https://doi.org/10.1177/1088868314523838>
- Batson, C. D. (2009). These things called empathy: Eight related but distinct phenomena. In J. Decety & W. Ickes (Eds.), *The social neuroscience of empathy* (pp. 3-15). Cambridge, MA: Bradford.
- Braun, B., Stopfer, J. M., Müller, K. W., Beutel, M. E., & Egloff, B. (2016). Personality and video gaming: Comparing regular gamers, non-gamers, and gaming addicts and differentiating between game genres. *Computers in Human Behavior*, 55, 406-412. <https://doi.org/10.1016/j.chb.2015.09.041>
- Clement, J. (2023). Most popular video game genres among internet users worldwide as of 3rd quarter 2022, by age group. *Statista*. Retrieved from

- <https://www.statista.com/statistics/1263585/top-video-game-genres-worldwide-by-age/>
- Costello, A. B. & Osborne, J. (2005). Best practices in exploratory factor analysis: four recommendations for getting the most from your analysis, *Practical Assessment, Research, and Evaluation* 10(1), 7. <https://doi.org/10.7275/jyj1-4868>
- Dadds, M. R., Hunter, K., Hawes, D. J., Frost, A. D., Vassallo, S., Bunn, P., & El Masry, Y. (2008). A measure of cognitive and affective empathy in children using parent ratings. *Child Psychiatry and Human Development*, 39(2), 111-122. <https://doi.org/10.1007/s10578-007-0075-4>
- Funk, J. B., Buchman, D. D., Jenks, J., & Bechtoldt, H. (2003). Playing violent video games, desensitization, and moral evaluation in children. *Journal of Applied Developmental Psychology*, 24(4), 413-436. [https://doi.org/10.1016/s0193-3973\(03\)00073-x](https://doi.org/10.1016/s0193-3973(03)00073-x)
- Greitemeyer, T., Osswald, S., & Brauer, M. (2010). Playing prosocial video games increases empathy and decreases schadenfreude. *Emotion*, 10(6), 796-802.
- Johnson, D. W., & Johnson, R. T. (1989). *Cooperation and competition: Theory and research*. Interaction Book Company.
- Knežević, G., & Momirović, K. (1996). Algoritam i program za analizu relacija kanoničke korelacijske analize i kanoničke analize kovarijansi [Algorithm and program for analyzing relationships in canonical correlation analysis and canonical covariance analysis]. *Problemi Merenja u Psihologiji*, 2, 7-16.
- Lee, K., & Ashton, M. C. (2004). Psychometric properties of the HEXACO personality inventory. *Multivariate Behavioral Research*, 39(2), 329-358. [https://doi.org/10.1207/s15327906mbr3902\\_8](https://doi.org/10.1207/s15327906mbr3902_8)
- Levitan, J. A., & Vachon, D. D. (2021). The nuanced association between deficient empathy and sexual aggression. *Personality and Individual Differences*, 177, 110812. <https://doi.org/10.1016/j.paid.2021.110812>
- Lozić, M., Butković, A., Vukasović Hlupić, T., & Bratko, D. (2022, April). *Empirical overlap and predictive validity of Big Five and HEXACO personality models* [Paper presentation]. 22nd Psychology Days in Zadar: Book of Selected Proceedings, Zadar, Croatia. <https://doi.org/10.15291/mpress90>
- Mitić, A. D. (2017). *Psihološke osnove stava prema upadljivoj potrošnji* [Psychological foundations of attitudes toward conspicuous consumption] (Doktorska

- disertacija, Univerzitet u Beogradu, Beograd, Srbija). Retrieved from <https://nardus.mpn.gov.rs/handle/123456789/8276>
- Mitić, A., Petrović, I., & Đurić, V. (2018). Social rank styles, machiavellianism and the attitude toward conspicuous consumption. *Primenjena Psihologija*, 11(2), 207–225. <https://doi.org/10.19090/pp.2018.2.207-225>
- Peever, N., Johnson, D., & Gardner, J. (2012, July). Personality & video game genre preferences. In *Proceedings of the 8th Australasian conference on interactive entertainment: Playing the system* (pp. 1-3). <https://doi.org/10.1145/2336727.2336747>
- Reniers, R. L., Corcoran, R., Drake, R., Shryane, N. M., & Völlm, B. A. (2011). The QCAE: A questionnaire of cognitive and affective empathy. *Journal of Personality Assessment*, 93(1), 84–95. <https://doi.org/10.1080/00223891.2010.528484>
- Ronen, S., & Zuroff, D. C. (2017). How does secure attachment affect job performance and job promotion? The role of social-rank behaviors. *Journal of Vocational Behavior*, 100, 137–148. <https://doi.org/10.1016/j.jvb.2017.03.006>
- Shamay-Tsoory, S. G., Aharon-Peretz, J., & Perry, D. (2009). Two systems for empathy: A double dissociation between emotional and cognitive empathy in inferior frontal gyrus versus ventromedial prefrontal lesions. *Brain*, 132(3), 617–627. <https://doi.org/10.1093/brain/awn279>
- Thielmann, I., Moshagen, M., Hilbig, B. E., & Zettler, I. (2022). On the comparability of basic personality models: Meta-analytic correspondence, scope, and orthogonality of the Big Five and HEXACO dimensions. *European Journal of Personality*, 36(6), 870–900. <https://doi.org/10.1177/08902070211026793>
- Vachon, D. D., & Lynam, D. R. (2016). Fixing the problem with empathy: Development and validation of the affective and cognitive measure of empathy. *Assessment*, 23(2), 135–149. <https://doi.org/10.1177/1073191114567941>
- Veltri, N., Krasnova, H., Baumann, A., & Kalayamthanam, N. (2014). Gender Differences in Online Gaming: A Literature Review. In: *20th Americas Conference on Information Systems: Smart Sustainability: The Information Systems Opportunity*, (2117–2129). Curran Associates, Inc. <https://doi.org/10.7892/boris.68896>
- Wang, Z., Sapienza, A., Culotta, A., & Ferrara, E. (2019, August). Personality and behavior in role-based online games. In *2019 IEEE Conference on Games (CoG)* (pp. 1–8). IEEE.

- 
- We PC. (n.d.). Video game industry statistics, trends and data in 2023. Retrieved February 13, 2021, from <https://www.wepc.com/news/video-game-statistics/>
- Zeigler-Hill, V., & Monica, S. (2015). The HEXACO model of personality and video game preferences. *Entertainment Computing*, 11, 21-26.  
<http://dx.doi.org/10.1016/j.entcom.2015.08.001>
- Zettler, I., Thielmann, I., Hilbig, B. E., & Moshagen, M. (2020). The nomological net of the HEXACO model of personality: A large-scale meta-analytic investigation. *Perspectives on Psychological Science*, 15(3), 723-760.  
<https://doi.org/10.1177/1745691619895036>
- Zuroff, D. C., Fournier, M. A., Patall, E. A., & Leybman, M. J. (2010). Steps toward an evolutionary personality psychology: Individual differences in the social rank domain. *Canadian Psychology/Psychologie Canadienne*, 51(1), 58.  
<https://doi.org/10.1037/a0018472>

## Supplementary materials

**Table A**

*Intercorrelations for the subscales of empathy, social rank styles, and HEXACO personality traits*

	1	2	3	4	5	6	7	8	9	10	11
1. COG											
2. RES	-.05										
3. DIS	.27**	-.53**									
4. DL	.28**	.07**	.05**								
5. CB	.21**	-.30**	.48**	.21**							
6. RS	.002	.42**	-.32**	.18**	-.10**						
7. H	-.03	-.41**	.24**	-.15**	.19**	-.51**					
8. E	-.04*	-.13**	.40**	-.16**	.12**	-.09**	.01				
9. X	.32**	-.05**	.13**	.62**	.21**	.07**	-.10**	-.20**			
10. A	.06**	-.37**	.34**	-.15**	.33**	-.20**	.27**	-.07**	.06**		
11. C	.12**	-.18**	.09**	.22**	.14**	-.04*	.16**	-.05**	.11**	-.01	
12. O	.21**	-.78**	.22**	.26**	.19**	-.06**	.05**	.07**	.15**	.04*	.07**

*Note.* COG – Cognitive Empathy; RES – Affective resonance; DIS – Affective Dissonance; DL – Dominant Leadership; CB – Coalition-building; RS – Ruthless self-advancement; H – Honesty-humility; E – Emotionality; X – Extraversion; A – Agreeableness; C – Conscientiousness; O – Openness to experience.

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





Originalni naučni članak

# Interpersonalne kognitivne distorzije kao medijator učinka socijalne anksioznosti i depresivnosti na usamljenost studenata

Ana Petak<sup>1, 2</sup> 

<sup>1</sup> *Edukacijsko-rehabilitacijski fakultet, Sveučilište u Zagrebu, Hrvatska*

<sup>2</sup> *Fakultet hrvatskih studija, Sveučilište u Zagrebu, Hrvatska*

## SAŽETAK

Istraživanje je provedeno s ciljem utvrđivanja jesu li interpersonalne kognitivne distorzije u podlozi odnosa socijalne anksioznosti i depresivnih simptoma s usamljenošću u studentskoj populaciji. Prikupljeni su podaci 228 studenata s različitih studija na području Republike Hrvatske, među kojima prednjače studijski programi društvenog usmjerenja (72.8%) te studenti preddiplomskog studija (74.1%). Istraživanje je provedeno online, a sudionici su ispunjavali *Skalu depresivnosti, anksioznosti i stresa, Skalu usamljenosti, Skalu interpersonalnih kognitivnih distorzija i Skalu interakcijske anksioznosti*. Kroz dvije medijacijske regresijske analize usamljenost se zasebno predviđa temeljem socijalne anksioznosti i temeljem depresivnih simptoma uz provjeru medijacijskog učinka interpersonalnih kognitivnih distorzija. Dodano su provedene još dvije medijacijske regresijske analize radi kontrole učinaka depresivnih simptoma u modelu u kojem je socijalna anksioznost prediktor te kontrole učinaka socijalne anksioznosti u modelu u kojem su prediktor depresivni simptomi. Socijalna anksioznost uz interpersonalne kognitivne distorzije objašnjava 26.8% varijance usamljenosti, a depresivni simptomi uz interpersonalne kognitivne distorzije objašnjavaju 29.7% varijance usamljenosti. Utvrđena je djelomična medijacija, odnosno socijalna anksioznost i depresivni simptomi predviđaju usamljenost izravno, i neizravno putem interpersonalnih kognitivnih distorzija. Rezultati su raspravljani u kontekstu postojeće literature, uz prijedloge praktičnih implikacija u savjetodavnom radu.

---

*Ključne riječi:* usamljenost, socijalna anksioznost, depresivni simptomi, kognitivne distorzije, studenti

---

UDK: 364.624.4-057.875

DOI: 10.19090/pp.v17i4.2527

Primljeno: 26.01.2024.

Primljena korekcija: 20.09.2024.

Prihvaćeno za štampanje:  
25.10.2024.

---



Copyright © 2024 The Author(s).

This is an open access article distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

---

✉ Kontakt imejl adresa: [apetak@fhs.unizg.hr](mailto:apetak@fhs.unizg.hr)

## Uvod

Uz sve biološke, psihološke, kognitivne i socijalne promjene koje razvojno prate razdoblje studiranja (Danneel et al., 2019; Hochberg & Konner, 2020), suvremena istraživanja (Auerbach et al., 2018; Lipson et al., 2022) bilježe porast internaliziranih problema mentalnog zdravlja u studentskoj populaciji. Ovo istraživanje fokusira se na tri učestala tipa internaliziranih problema, a to su socijalna anksioznost, depresivni simptomi i usamljenost (Danneel et al., 2019; Reitz et al., 2005). Iako se često javljaju u komorbiditetu, radi se o odvojenim konstruktima (Danneel et al., 2019; Fung et al., 2017; Lieberz et al., 2022), ali dinamika njihova odnosa nije dovoljno istražena (Danneel et al., 2019).

Tjeskoba koja se javlja u zamišljenoj ili realnoj situaciji u kojoj postoji mogućnost evaluacije od strane drugih obilježje je socijalne anksioznosti. Mogućnost da će nas drugi negativno evaluirati u socijalnom kontekstu može dovesti do straha i anksioznosti (Leary, 1985), a stupanj doživljenog straha u tim situacijama naziva se strahom od negativne evaluacije (Watson & Friend, 1969). Strah od negativne evaluacije pokazao se i potpunim medijatorom veze distresa i socijalne anksioznosti u situacijama javnih nastupa (Sigurvinsdottir et al., 2023). Socijalna anksioznost se može javiti tijekom komunikacije s drugima ili kao odgovor na socijalnu situaciju poput javnih nastupa (Leary, 1985), pri čemu je strah od procjene i potencijalnog ishoda te procjene njezino dominantno obilježje (Tovilović, 2004). Kada socijalna anksioznost svojim intenzitetom značajno ometa svakodnevni život radi se o poremećaju socijalne anksioznosti ili socijalnoj fobiji (The American Psychiatric Association [APA], 2022; Morrison & Heimberg, 2013), te je ta dva pojma važno razlikovati. Socijalna anksioznost u ovom radu odnosi se na sklonost doživljavanju anksioznosti u socijalnim interakcijama (Leary, 1985) na supkliničkoj razini, koja ne udovoljava kriterijima za dijagnozu poremećaja socijalne anksioznosti ili socijalne fobije. Tjeskoba u socijalnim interakcijama povezana je s depresivnim simptomima (Danneel et al., 2019), koji mogu imati znatne negativne učinke za vrijeme studija, odnosno u razdoblju rane odrasle dobi (Bertha & Balázs, 2013). Pasivnost, pesimizam i osjećaj beznađa koji se javljaju uz depresiju otežavaju traženje pomoći i povećavaju rizik trajnijih i ozbiljnijih problema, među kojima su i problemi u

socijalnim odnosima (Sontag-Padilla et al., 2018; Živčić-Bećirević et al., 2021). Još jedan simptom distresa u nekliničkoj populaciji koji je često prisutan u studenata je usamljenost (Hamamci & Duy, 2007; Pelzer & Pengpit, 2017). To je neugodno iskustvo koje proizlazi iz subjektivne kognitivne procjene postojanja nesrazmjera između pojedinčevih očekivanja od socijalnih odnosa te kvantitete i kvalitete postojećih socijalnih odnosa (Perlman & Peplau, 1981). Weiss (1973) razlikuje socijalnu i emocionalnu usamljenost, pri čemu se emocionalna odnosi na nedostatak bliskih veza (prijateljskih ili partnerskih), a socijalna na nedostatak širih socijalnih mreža (obiteljskih, prijateljskih ili susjedskih). Usamljenost ima široke zdravstvene posljedice. U krossekcijskom istraživanju studenata iz 25 zemalja pokazala se povezanom s problemima spavanja, kraćim trajanjem spavanja, uporabom duhana, pretjeranom uporabom interneta, agresivnim ponašanjem, ozljedama i rizičnim seksualnim ponašanjima (Pelzer & Pengpit, 2017), što dodatno naglašava važnost istraživanja usamljenosti u studentskoj populaciji.

Smjer povezanosti usamljenosti, socijalne anksioznosti i depresivnih simptoma nije sasvim jasan (Danneel et al., 2019). Moguće je da simptomi jednog od internaliziranih problema postaju medijator za razvoj drugog problema. Tako su primjerice adolescenti s internaliziranim problemima često podložni pristranom negativnom interpretiranju socijalnih situacija, tj. kognitivnim distorzijama u interpretaciji društvenog konteksta (Danneel et al., 2019; Spithoven et al., 2017), što može posredovati razvoju socijalne anksioznosti. Osim toga, određeni rizičan čimbenik može biti u podlozi više poteškoća mentalnog zdravlja, te je razvoj sekundarnog internaliziranog problema zapravo zakašnjela reakcija na već ranije prisutan čimbenik rizika (Danneel et al., 2019; Schleider et al., 2014). Longitudinalni rezultati pokazuju recipročnost odnosa, odnosno socijalna anksioznost predviđa razinu usamljenosti i depresivnih simptoma (Danneel et al., 2019), a razina usamljenosti i razina depresivnih simptoma predviđaju socijalnu anksioznost (Danneel et al., 2019; Lim et al., 2016) te nije jasno koji od internaliziranih problema je prethodnik, a koji se razvija sekundarno. Usamljenost može biti trajno stanje kojem doprinose genetski čimbenici i rani nepovoljni utjecaji na razvoj, a koji stvaraju ranjivost na probleme mentalnog

zdravlja. Za neke ljude usamljenost proizlazi iz drugih čimbenika vezanih uz mentalno zdravlje, poput prisutnosti kognitivnih distorzija i depresije, a za neke je proizvod traume, stigme, socijalne izolacije, ili kombinacije svega navedenog (Matthews et al., 2016; Pitman et al., 2018). Pokazalo se da kognitivne distorzije vezane uz doživljavanje odbacivanja u socijalnim odnosima doprinose osjećaju usamljenosti (Hamamci & Duy, 2007). Ipak, važno je naglasiti da snažna veza socijalne anksioznosti i usamljenosti ostaje i uz kontrolu učinaka depresije (Danneel et al., 2019), što ukazuje na potrebu za zasebnim promatranjem odnosa anksioznosti i depresije s usamljenosti.

Podloga povezanosti socijalne anksioznosti, depresivnih simptoma i usamljenosti nije dovoljno istražena, a može se tražiti u kognitivnoj komponenti koju posjeduju sva tri konstrukta (Lieberz et al., 2022; Nasir et al., 2016; Ota et al., 2020; Persons et al., 2023). U sve tri skupine internaliziranih problema iz ovog istraživanja javlja se kognitivna komponenta u formi pogrešnih predodžbi i ideja proizašlih iz vjerovanja i shema (Beck, 1976), a koje uključuju i procjene vezane uz interpersonalne odnose. Takve pogrešne predodžbe koje se pojavljuju kod neučinkovitog ili pogrešnog procesiranja informacija uslijed osobnih vjerovanja i shema nazivaju se kognitivne distorzije (Beck, 1976), a njihova je prisutnost utvrđena kod socijalne anksioznosti, depresivnih simptoma i usamljenosti (Batmaz et al., 2015; Ota et al., 2020; Nasir et al., 2016). Kognitivne distorzije općenito doprinose internaliziranim problemima te su ujedno transdijagnostički proces u njihovoj podlozi (Batmaz et al., 2015). Beck (1976) definira šest tipova kognitivnih distorzija (proizvoljno zaključivanje, mentalno filtriranje, pretjerano generaliziranje, umanjivanje pozitivnog, personalizacija i crno-bijelo mišljenje) koje drugi autori (npr. Burns, 1999) proširuju i nadopunjavaju.

Internaliziranim problemima koji su u fokusu ovog istraživanja (socijalna anksioznost, depresivni simptomi i usamljenost) zajednička je prisutnost kognitivnih distorzija kao kognitivne komponente problema, ali i podložnost učincima socijalnih odnosa, što možemo smatrati socijalnom komponentom problema. Kognitivne distorzije čiji sadržaj je usmjeren na socijalne odnose nazivaju se interpersonalnim kognitivnim distorzijama (Hamamci & Büyükoztürk, 2004). Interpersonalne kognitivne distorzije obuhvaćaju pogrešnu percepciju

odnosa, percepciju odbacivanja u socijalnim odnosima te nerealna očekivanja od odnosa (Hamamci & Büyükköztürk, 2004), a povezane su sa socijalnom anksioznošću (Batmaz et al., 2015; Kuru et al., 2018; Wong et al., 2017), depresijom (Batmaz et al., 2015; Ota et al., 2020; Persons et al., 2023) i usamljenosti (Hamamci & Duy, 2007; Nasir et al., 2016). Iako se uz različite internalizirane probleme javljaju različite kognitivne distorzije, zbog kognitivne komponente i naglaska na socijalne odnose ovo istraživanje proučava ulogu interpersonalnih kognitivnih distorzija kao posrednika veze usamljenosti sa socijalnom anksioznošću i depresivnim simptomima.

Kognitivne distorzije doprinose nastanku i održavanju socijalne anksioznošću (Kuru et al., 2018; Tovilović, 2004). Neki od potencijalnih načina na koji kognitivne distorzije doprinose internaliziranim problemima su bazirani na načinu viđenja socijalnih odnosa i socijalnog konteksta. U podlozi pojavnosti socijalne anksioznošću je snažna želja pojedinca da ostavi pozitivan dojam te izražena nesigurnost u vlastite sposobnosti da to realizira (Clark & Wells, 1995). Na kognitivnom planu socijalna anksioznost često uključuje negativne izjave o sebi vezane uz socijalne odnose, selektivno pamćenje samo negativnih informacija o socijalnim kontaktima uz ignoriranje pozitivnih i postavljanje vrlo visokih standarda o vlastitom socijalnom ponašanju (Edelman, 1987; Tovilović, 2004). Disfunkcionalna vjerovanja o sebi vezana uz socijalne odnose obuhvaćaju automatske misli (npr. „Nitko me ne voli.“), neadaptivne pretpostavke (npr. „Ako sada pogriješim, mislit će da sam nesposoban.“) i neadaptivna temeljna uvjerenja (npr. „Nesposoban sam.“) što vodi do razvoja dubljih problema (Clark & Wells, 1995; Kuru et al., 2018). Kognitivne distorzije te strahovi i negativna očekivanja od socijalnih odnosa prisutni kod socijalne anksioznošću povezani su s percepcijom odbacivanja u interpersonalnim odnosima što doprinosi usamljenosti (Kuru et al., 2018; Nasir et al., 2016). Programi intervencija za socijalnu anksioznost često su bazirani na promjeni straha od evaluacije kao jedne od ključnih komponenti u podlozi tog procesa (Lieberz et al., 2022).

Neke kognitivne distorzije u depresiji povezane su sa socijalnim strahovima te negativnim očekivanjima od socijalnih interakcija (Nasir et al., 2016), uz nisko samopoštovanje, nisku samoefikasnost, osjećaj bezvrijednosti i

vanjski lokus kontrole (Nasir et al., 2016; Wardle et al., 2004). Promjena kognitivnih distorzija u tretmanu depresije je recipročno povezana s afektivnim promjenama i depresivnim simptomima (Persons et al., 2023). Kognitivne distorzije koje uključuju ideje odbacivanja u interpersonalnim odnosima doprinose usamljenosti, odnosno percepcija odbačenosti i izoliranosti vodi osjećaju samoće (Hamamci & Duy, 2007; Nasir et al., 2016) te može činiti začarani krug s depresijom (Nasir et al., 2016).

Ranije spomenuti nalazi govore u prilog socijalno-kognitivnoj komponenti podloge veze usamljenosti sa socijalnom anksioznošću i depresivnim simptomima. Tako su kod socijalne anksioznosti prisutne kognitivne distorzije pojedinca o sebi i načinima na koje drugi procjenjuju njegovo ponašanje (Kuru et al., 2018). Na njih se nadovezuju s depresijom povezani socijalni strahovi i negativna očekivanja od socijalnih odnosa, a percepcija odbacivanja u socijalnim interakcijama doprinosi usamljenosti (Nasir et al., 2016).

Budući da se socijalna anksioznost, depresivni simptomi i usamljenost često javljaju u komorbiditetu, a nije jasna podloga njihove povezanosti, istraživanje kognitivnih distorzija kao potencijalnog medijatora tih povezanosti glavni je doprinos ovog istraživanja. Socijalno anksiozne osobe imaju disfunkcionalna vjerovanja o sebi i načinima na koje drugi procjenjuju njihovo ponašanje, što vodi kognitivnim pogreškama, stoga je jedna od ključnih komponenti kognitivno-bihevioralnih terapija prepoznavanje i promjena kognitivnih distorzija (Kuru et al., 2018). Budući da su ranija istraživanja (npr. Danneel et al., 2019) pokazala kako veza socijalne anksioznosti i usamljenosti postoji neovisno o depresiji, testirana su dva teorijska modela u kojima se usamljenost zasebno predviđa temeljem socijalne anksioznosti i temeljem depresivnim simptomima, uz provjeru medijacijskog učinka interpersonalnih kognitivnih distorzija. S obzirom na učestalost komorbiditeta internaliziranih problema (Danneel et al., 2019; Lieberz et al., 2022), dodatno su testirana još dva modela u kojima su uvedene kontrolne varijable – kontrolirani su učinci depresivnih simptoma u medijacijskom modelu u kojem je prediktor socijalna anksioznost te učinci socijalne anksioznosti u medijacijskom modelu u kojem su prediktor depresivni simptomi. Važno je napomenuti da se ovo istraživanje ne

bavi kliničkim poremećajima depresije ili socijalne anksioznosti (APA, 2022) već depresivnim simptomima i simptomima socijalne anksioznosti koji su u različitim razinama prisutni u općoj populaciji. Potvrđivanje interpersonalnih kognitivnih distorzija kao potencijalnog posrednika odnosa simptoma socijalne anksioznosti i depresivnosti s usamljenošću ponudilo bi praktičan doprinos za planiranje preventivnih intervencija namijenjenih zaštiti mentalnog zdravlja studenata.

Cilj ovog istraživanja je provjeriti je li u podlozi odnosa usamljenosti sa socijalnom anksioznosti i depresivnim simptomima socijalno-kognitivna komponenta, odnosno jesu li kognitivne distorzije vezane uz socijalne interakcije medijator povezanosti socijalne anksioznosti i depresivnih simptoma s usamljenosti.

## Metoda

### Sudionici

U istraživanju je sudjelovalo 228 studenata s područja Republike Hrvatske, uglavnom ženskog spola (82%) s različitih studijskih područja (Tabela 1). Više od dvije trećine studenata pohađa preddiplomski studij (74.1%), a ostali pohađaju diplomski studij (25.9%). Većina studenata procjenjuje svoj socioekonomski status prosječnim (67.5%), 24.1% iznadprosječnim, a 8.3% ispodprosječnim.



**Tabela 1***Prikaz sociodemografskih podataka sudionika (N=228)*

		% (n)
Područje studija	Društveno područje	72.8% (166)
	Prirodne znanosti	7.5% (17)
	Humanističko područje	4.4% (10)
	Tehničko područje	7.5% (17)
	Biomedicina i zdravstvo	5.7% (13)
	Umjetničko područje	0.9% (2)
	Biotehničko područje	1.3% (3)

## Instrumenti

### *Skala interakcijske anksioznosti*

Kao mjera socijalne anksioznosti korištena je Skala interakcijske anksioznosti (Leary, 1983, preveo Burušić, 2009) koja kroz 15 čestica, uz Likertovu procjenu od 1 (Uopće se ne odnosi na mene) do 5 (U potpunosti se odnosi na mene), predstavlja mjeru anksioznosti doživljene u ovisnim interakcijskim situacijama. Ukupan rezultat je suma rezultata na česticama, nakon rekodiranja čestica obrnutog smjera. Skala posjeduje dobru pouzdanost unutarnje konzistencije koja u ovom istraživanju iznosi  $\alpha = .91$ . Radi validacije instrumenta u ovom istraživanju provedena je konfirmatorna faktorska analiza (CFA) u programu Mplus 8.11 (Muthén i Muthén, 1998-2011). Samo jedan pokazatelj pristajanja modela podacima (SRMR) ukazuje na jednofaktorsku strukturu skale (SRMR = .07, CFI = .84, TLI = .81, RMSEA = .11, 90% CI [.11, .12]). Provedba eksploratorne faktorske analize metodom PAF (eng. principal axis factoring) uz kosokutnu rotaciju (oblique oblimum) u JASP-u (JASP Team, 2024) temeljem vrijednosti karakterističnog korijena prije ekstrakcije i uvida u scree plot dijagram ukazuje na dva povezana faktora ( $r = .64$ ) u podlozi skale. Prema podacima PAF

jedan faktor prije ekstrakcije objašnjava 41.3% varijance, a drugi 6.3% varijance konstrukta. Rezultati paralelnih analiza zasnovanih na faktorskoj analizi minimalnog ranga (MRFA) također ukazuju na dva međusobno korelirana faktora ( $r = .59$ ). Uvidom u faktorska zasićenja čestica uočava se tendencija da se čestice koje ukazuju na generalnu anksioznost u socijalnim situacijama raspoređuju na prvi faktor, a one koje ukazuju na anksioznost u komunikaciji s autoritetima na drugi faktor. S obzirom na visoku korelaciju među faktorima, kao mjera simptoma socijalne anksioznosti korišten je ukupan rezultat na Skali interakcijske anksioznosti. Originalna skala je javno dostupna, a dobiveno je odobrenje prevoditelja (Burušić, 2009) za korištenje u istraživanju.

#### *Skala depresivnosti, anksioznosti i stresa (DASS-21)*

Kao mjera simptoma depresije korištena je subskala depresije iz *Skale depresivnosti, anksioznosti i stresa* (DASS-21, Lovibond & Lovibond, 1995; preveli Sušac et al., 2018). DASS-21 je skraćena verzija originalne DASS-42 skale te se sastoji od 21 čestice sa odgovorima na skali procjene, od 0 (*Uopće se ne odnosi na mene*) do 3 (*U potpunosti se odnosi na mene*). Ukupni rezultati na tri subskele (depresija, anksioznost i stres) formira se kao suma odgovora po skalama. DASS-21 ima zadovoljavajuće metrijske karakteristike (Sušac et al., 2018), a pouzdanost subskele depresije u ovom istraživanju iznosi  $\alpha = .88$ . CFA u ovom istraživanju potvrđuje trofaktorsku strukturu skale (CFI = .92, TLI = .90, SRMR = .06, RMSEA = .07, 90% CI [.07, .08]). Skala je javno dostupna te je dobiveno odobrenje za korištenje prevedene verzije (Sušac et al., 2018).

#### *Skala usamljenosti*

Kao mjera usamljenosti korištena je *Skala usamljenosti* (De Jong-Gierveld & Van Tilburg, 1999; preveli Trbus & Petak, 2024). Skala se sastoji od 11 čestica te nudi ukupan rezultat i rezultate na subskalama emocionalne i socijalne usamljenosti. Autori predlažu više formata odgovora (mogući odgovori su npr.: „Da!“, „Da.“, „Više-manje.“, „Ne.“, „Ne!“) i bodovanja (De Jong-Gierveld & Van Tilburg, 1999). Primijenjeni format odgovora je Likertova skala, od 1 (*Uopće se ne slažem*) do 5 (*U potpunosti se slažem*), a rezultat je formiran kao zbroj odgovora na česticama, nakon rekodiranja čestica obrnutog smjera. Skala posjeduje

zadovoljavajuće metrijske karakteristike (De Jong & Van Tilburg, 2006), a pouzdanost u ovom istraživanju je .89. CFA u ovom istraživanju potvrđuje dvofaktorsku strukturu skale (CFI = .93, TLI = .92, SRMR = .05, RMSEA = .09, 90% CI [.07, .11]).

### *Skala interpersonalnih kognitivnih distorzija*

Mjera kognitivnih distorzija u odnosima je *Skala interpersonalnih kognitivnih distorzija* (Hamamci & Büyükköztürk, 2004, preveli Petak et al., 2023). Skala je namijenjena mjerenju kognitivnih distorzija u romantičnim odnosima, no primjenjiva je i na druge interpersonalne odnose. Sastoji se od 19 čestica, Likertova procjena, od 1 (*Uopće se ne slažem*) do 5 (*U potpunosti se slažem*), pri čemu je ukupan rezultat suma odgovora na česticama. Rezultat je moguće promatrati i kroz subskale interpersonalno odbacivanje, nerealno očekivanje u odnosima i interpersonalna pogrešna percepcija. U ovom istraživanju CFA granično potvrđuje trofaktorsku strukturu skale (CFI = .81, TLI = .78, SRMR = .06, RMSEA = .07, 90% CI [.05, .07]). Pouzdanost unutarnje konzistencije u ovom istraživanju iznosi  $\alpha = .76$ .

### Postupak

Istraživanje je provedeno online putem platforme SurveyMonkey, tijekom rujna/listopada 2023. godine. Poveznica s upitnikom distribuirana je studentima različitim kanalima (grupnim mailovima studenata, studentskim grupama na društvenim medijima). Sudjelovanje u istraživanju bilo je dobrovoljno, anonimno, bez prikupljanja osobnih podataka ispitanika. Nakon upoznavanja s ciljem istraživanja, sudionici su kroz informirani pristanak dobrovoljno odlučili o sudjelovanju u istraživanju te su informirani o pravu na odustajanje od sudjelovanja u bilo kojem trenutku. Ispunjavanje upitnika trajalo je oko desetak minuta.

### Rezultati

Rezultati iz Tabele 2 prikazuju deskriptivne podatke te interkorelacije socijalne anksioznosti, depresivnih simptoma, interpersonalnih kognitivnih distorzija i usamljenosti. Normalnost distribucija provjerena je Kolmogorov-

Smirnovim testom te z-statistikom zakrivljenosti ( $z_{skew}$ ). Apsolutna vrijednost  $z_{skew}$  veća od 1.96 ukazuje na odstupanje distribucije od normalnosti (Kim, 2013).

**Tabela 2**

*Prikaz deskriptivnih podataka i korelacija između mjera socijalne anksioznosti, depresivnih simptoma, interpersonalnih kognitivnih distorzija i usamljenosti (N=228)*

		<i>M</i>	<i>SD</i>	<i>zakrivljenost</i> ( <i>SE</i> )	<i>Z<sub>skew</sub></i>	<i>K-S z</i>	1	2	3	4
1.	SA	49.95	12.12	-.288 (.161)	1.79	.072**	1			
2.	DASS-D	13.19	4.77	.760 (.161)	4.72	.157**	.292**	1		
3.	IKD	56.56	9.29	-.153 (.161)	0.95	.046	.362**	.460**	1	
4.	U	27.84	10.12	.313 (.161)	1.94	.094**	.388**	.478**	.460**	1

*Note.* SA – socijalna anksioznost; DASS-D – depresivni simptomi; IKD- interpersonalne kognitivne distorzije; U-usamljenost.

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

Prema Kolmogorov-Smirnovom testu samo se rezultati interpersonalnih kognitivnih distorzija raspodjeljuju po normalnoj distribuciji, no za ostale varijable apsolutna vrijednost z-statistika zakrivljenosti (omjer statistika zakrivljenosti i standardne greške) ukazuje na prikladnost gotovo svih podataka za parametrijsku obradu. Jedino se rezultati depresivnih simptoma raspodjeljuju po pozitivno asimetričnoj distribuciji, odnosno grupiraju se oko nižih vrijednosti

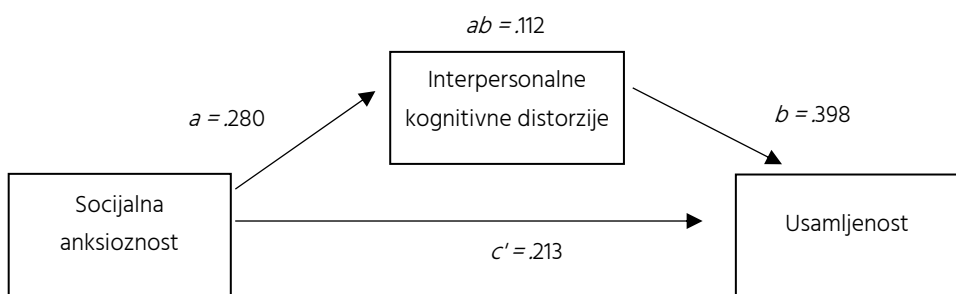
skale. Depresivni simptomi, socijalna anksioznost, usamljenost i kognitivne distorzije su u međusobnim pozitivnim interkorelacijama (Tabela 2).

Za provjeru prediktivne uloge socijalne anksioznosti i depresivnih simptoma na usamljenost te posredujuću ulogu interpersonalnih kognitivnih distorzija provedene su ukupno četiri zasebne medijacijske regresijske analize u programu PROCESS (Hayes, 2013), uz bootstrap metodu (1000 uzoraka) određivanja intervala pouzdanosti. U prvoj medijacijskoj regresijskoj analizi ispitano je posreduju li interpersonalne kognitivne distorzije povezanosti socijalne anksioznosti i usamljenosti, a u drugoj analizi provjereno je ostaju li rezultati jednaki ako se u model uvedu depresivni simptomi kao kovarijat. U trećoj medijacijskoj regresijskoj analizi ispitano je posreduju li interpersonalne kognitivne distorzije povezanosti depresivnih simptoma i usamljenosti, a analiza je ponovljena i uz kontrolu učinaka socijalne anksioznosti.

Posreduju li interpersonalne kognitivne distorzije povezanosti socijalne anksioznosti i usamljenosti ispitano je u prvoj medijacijskoj regresijskoj analizi (Slika 1).

### Slika 1

*Shema i prikaz rezultata medijacijske regresijske analize interpersonalnih kognitivnih distorzija kao medijatora povezanosti socijalne anksioznosti i usamljenosti*



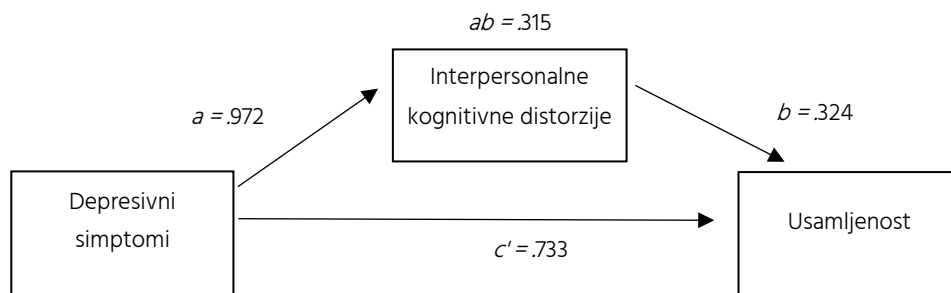
Uz interpersonalne kognitivne distorzije, socijalna anksioznost objašnjava 26.76% varijance usamljenosti. U prvom medijacijskom modelu utvrđen je značajan direktan učinak socijalne anksioznosti na usamljenost ( $c' = .213$ ,  $\beta = .255$ ,  $SE = .051$ , 95% CI [.11, .31]). Utvrđen je i indirektni učinak socijalne

anksioznosti na usamljenost posredovan kognitivnim distorzijama ( $ab = .112$ ,  $SE = .03$ , 95% CI [.07, .20]), odnosno viša socijalna anksioznost dovodi do više interpersonalnih kognitivnih distorzija ( $a = .280$ ,  $\beta = .363$ ,  $SE = .048$ , 95% CI [.19, .38]), što dovodi do veće usamljenosti ( $b = .398$ ,  $\beta = .367$ ,  $SE = .07$ , 95% CI [.27, .53]). Možemo zaključiti da je potvrđen model djelomične medijacije, odnosno da socijalna anksioznost doprinosi usamljenosti direktno, ali i indirektno putem interpersonalnih kognitivnih distorzija. Djelomična medijacija potvrđena je i u ponovljenom medijacijskom regresijskom modelu u kojem su kontrolirani učinci depresivnih simptoma ( $c' = .176$ ,  $SE = .05$ , 95% CI [.08, .27];  $ab = .048$ ,  $SE = .02$ , 95% CI [.02, .09]).

Posreduju li interpersonalne kognitivne distorzije povezanosti depresivnih simptoma i usamljenosti ispitano je u slijedeće dvije medijacijske regresijske analize (Slika 2).

### Slika 2

*Shema i prikaz rezultata medijacijske regresijske analize interpersonalnih kognitivnih distorzija kao medijatora povezanosti depresivnih simptoma i usamljenosti*



Uz interpersonalne kognitivne distorzije, depresivni simptomi objašnjavaju 29.73% varijance usamljenosti. Utvrđen je značajan direktan učinak depresivnih simptoma na usamljenost ( $c' = .733$ ,  $\beta = .334$ ,  $SE = .14$ , 95% CI [.46, 1.009]). Značajan je i indirektni učinak depresivnih simptoma na usamljenost posredovan kognitivnim distorzijama ( $ab = .315$ ,  $SE = .08$ , 95% CI [.15, .48]), odnosno više depresivnih simptoma dovodi do više interpersonalnih kognitivnih

distorzija ( $a = .972$ ,  $\beta = .480$ ,  $SE = .118$ , 95% CI [.74, 1.204]), što dovodi do veće usamljenosti ( $b = .324$ ,  $\beta = .299$ ,  $SE = .07$ , 95% CI [.188, .46]). I u ovom slučaju je potvrđen model djelomične medijacije, odnosno depresivni simptomi doprinose usamljenosti direktno, ali i indirektno putem interpersonalnih kognitivnih distorzija. Djelomična medijacija potvrđena je i u posljednjem medijacijskom regresijskom modelu, uz kontrolu socijalne anksioznosti ( $c' = .655$ ,  $SE = .14$ , 95% CI [.38, .928];  $ab = .215$ ,  $SE = .08$ , 95% CI [.07, .37]).

## Rasprava

Glavni cilj istraživanja je bila provjera socijalno-kognitivne komponente u pozadini odnosa usamljenosti sa socijalnom anksioznosti i depresijom, odnosno utvrđivanje jesu li kognitivne distorzije vezane uz socijalne interakcije medijator povezanosti socijalne anksioznosti i depresivnih simptoma s usamljenosti. Postavljena su dva temeljna modela u kojima se usamljenost predviđa zasebno na temelju socijalne anksioznosti i na temelju depresivnih simptoma, pri čemu su interpersonalne kognitivne distorzije testirane kao medijator tih odnosa. Dodatno je provjerena postojanost tih odnosa ako se kontroliraju učinci depresivnih simptoma u modelu u kojem je socijalna anksioznost prediktor te učinci socijalne anksioznosti u modelu u kojem su depresivni simptomi prediktor.

Rezultati ovog istraživanja pokazuju da socijalna anksioznost predviđa usamljenost izravno, ali i neizravno putem interpersonalnih kognitivnih distorzija. Nastanku i održavanju socijalne anksioznosti doprinose kognitivne distorzije (Kuru et al., 2018; Tovilović, 2004), a kognitivne distorzije vode i do usamljenosti (Nasir et al., 2016), stoga je nalaz indirektnog učinka socijalne anksioznosti na usamljenost putem kognitivnih distorzija vezanih uz socijalne odnose očekivan. Kao što je u obrazloženo u uvodu, pogrešna uvjerenja o sebi i selektivna pažnja prisutni kod socijalno anksioznih osoba povezuju se s percepcijom odbacivanja u društvenim odnosima te doprinose usamljenosti (Kuru et al., 2018; Nasir et al., 2016; Tovilović, 2004).

Direktan učinak socijalne anksioznosti na usamljenost očekivan je s obzirom na prethodna istraživanja (Danneel et al., 2019; Lim et al., 2016) te se

može objasniti na nekoliko načina. Socijalna anksioznost se dosljedno povezuje s percepcijom niske socijalne podrške (Rapee et al., 2015) i lošije kvalitete prijateljstava (Rodebaugh et al., 2015), što su obilježja usamljenosti (Lieberz et al., 2022). Tjeskoba, nervoza i iritacija vezane uz anksioznost mogu voditi problemima u interpersonalnoj komunikaciji. Socijalno anksiozni pojedinci manje komuniciraju s drugima, što ih čini usamljenima (Sübaşı, 2007). Uz to, iako usamljenost proizlazi iz motivacije za povezivanjem s drugima, smatra se i da usamljeni pojedinci preferiraju izbjegavanje socijalnih situacija, a izbjegavanje socijalnih situacija jedan je od ključnih elemenata socijalne anksioznosti (Cacioppo & Cacioppo, 2018; Lieberz et al., 2022).

Depresivni simptomi predviđaju usamljenost izravno, ali i neizravno putem interpersonalnih kognitivnih distorzija. Očekivano je da će interpersonalne kognitivne distorzije posredovati vezi depresivnih simptoma i usamljenosti. Negativna očekivanja i strahovi vezani uz interpersonalne odnose sadržaj su kognitivni pogrešaka kod depresivnih simptoma (Nasir et al., 2016), a osjećaj odbačenosti u socijalnim odnosima doprinosi usamljenosti i može recipročno poticati depresiju (Hamamci & Duy, 2007; Nasir et al., 2016). Uz to, tretman usmjeren na promjene kognitivnih distorzija pokazao se učinkovitim za depresivne simptome (Persons et al., 2023).

Nadalje, depresivni simptomi su i direktno povezani s usamljenosti. Recentni rezultati nalaze direktnu vezu usamljenosti i depresije kada je usamljenost prediktor depresije (Kraav et al., 2021) te kada je depresija prediktor usamljenosti (McHugh Power et al., 2020). Ipak, McHugh Power i suradnici (2020) autoregresijskim križnim modelom potvrđuju samo da depresija vodi do usamljenosti, no ne i obrnuto. Depresivni simptomi mogu voditi do povlačenja iz socijalnih odnosa radi preosjetljivosti na percepciju prijatnje u socijalnim situacijama (Allen & Badcock, 2003), što radi smanjenja socijalnih kontakata djeluje na usamljenost. Moguće je i da usamljenost stimulira depresivne simptome (Demir & Kutlu, 2016), što je još jedan potencijalni put njihova direktnog odnosa.

Osim direktne veze depresivnih simptoma i usamljenosti, potencijalni medijatori tog odnosa su i neke druge varijable, poput bazičnih vjerovanja,



automatskih negativnih misli (Kuzu et al., 2020) ili ovisnosti o internetu (Demir & Kutlu, 2016) koje su se pokazale važnima, a nisu obuhvaćene ovim istraživanjem. Iako rezultati nude doprinos objašnjenju odnosa depresivnih simptoma i usamljenosti, potrebna su daljnja istraživanja kako bi se utvrdili pozadinski procesi tih međuodnosa.

Djelomična medijacija interpersonalnih kognitivnih distorzija na vezu socijalne anksioznosti i usamljenosti postoji i uz kontrolu učinaka depresije, te je prisutna i kada su depresivni simptomi prediktor, a socijalna anksioznost kovarijat. S obzirom na prethodna istraživanja (Danneel et al., 2019) očekivano je da veza socijalne anksioznosti i usamljenosti perzistira i uz kontrolu depresivnih simptoma. Unatoč čestom komorbiditetu radi se o teorijski i empirijski različitim konstruktima (Daneel et al., 2019; Fung et al., 2017; Lieberz et al., 2022), koji vjerojatno imaju i različite puteve djelovanja na usamljenosti. U ovom se istraživanju pokazalo kako je jedan od zajedničkih puteva njihove veze s usamljenosti socijalno-kognitivna komponenta, odnosno interpersonalne kognitivne distorzije. Iako su rezultati doprinos postojećoj literaturi, potrebno je imati na umu da ti čimbenici objašnjavaju tek manji udio varijabiliteta usamljenosti. Potrebno je istražiti ostale puteve njihove povezanosti kao bi se utvrdili i drugi potencijalni transdijagnostički procesi na koje se može preventivni djelovati.

Budući da su kognitivne distorzije rijetko istraživane u podlozi odnosa socijalne anksioznosti, depresivnih simptoma i usamljenosti, rasvjetljavanje njihove uloge u tom odnosu je glavni doprinos istraživanja. Kroz nalaz da su interpersonalne kognitivne distorzije medijator veze socijalne anksioznosti i depresivnih simptoma s usamljenosti, istraživanje je doprinos literaturi o tretmanima internaliziranih poremećaja. Stručnjaci koji pružaju psihosocijalnu podršku trebaju uzeti u obzir kognitivne distorzije pri planiranju preventivnih programa i intervencija za studente. Informiranje studenata o učincima disfunkcionalnih vjerovanja i kognitivnih distorzija na njihove osjećaje i ponašanje može biti učinkovito za promjenu ponašanja (Kuzucu et al., 2020). Dodatno, za suočavanje s usamljenosti preporuka je i planiranje grupnih savjetodavnih susreta u kojima usamljeni i socijalno anksiozni pojedinci mogu

učinkovitije učiti suočavanje s negativnim emocijama kroz interakcije s drugima (Chrismore et al., 2011; Kuzucu et al., 2020). Socijalna podrška značajno smanjuje razine usamljenosti (Zhang & Dong, 2022), ali i drugih problema mentalnog zdravlja (Harandi et al., 2017). Osobe s više pozitivnih socijalnih odnosa i višom socijalnom podrškom imaju ujedno bolje komunikacijske vještine te bolju zaštitu od stresa, dobivaju više emocionalne pažnje, podrške te povratnih informacija na izvedbu, što ih štiti od problema mentalnog zdravlja (više u Harandi et al., 2017).

Budući da su kognitivne distorzije rijetko istraživane u podlozi odnosa socijalne anksioznosti, depresivnih simptoma i usamljenosti, rasvjetljavanje njihove uloge u tom odnosu je glavni doprinos istraživanja. Kroz nalaz da su interpersonalne kognitivne distorzije medijator veze socijalne anksioznosti i depresivnih simptoma s usamljenosti, istraživanje je doprinos literaturi o tretmanima internaliziranih poremećaja. Stručnjaci koji pružaju psihosocijalnu podršku trebaju uzeti u obzir kognitivne distorzije pri planiranju preventivnih programa i intervencija za studente. Informiranje studenata o učincima disfunkcionalnih vjerovanja i kognitivnih distorzija na njihove osjećaje i ponašanje može biti učinkovito za promjenu ponašanja (Kuzucu et al., 2020). Dodatno, za suočavanje s usamljenosti preporuka je i planiranje grupnih savjetodavnih susreta u kojima usamljeni i socijalno anksiozni pojedinci mogu učinkovitije učiti suočavanje s negativnim emocijama kroz interakcije s drugima (Chrismore et al., 2011; Kuzucu et al., 2020). Socijalna podrška značajno smanjuje razine usamljenosti (Zhang & Dong, 2022), ali i drugih problema mentalnog zdravlja (Harandi et al., 2017). Osobe s više pozitivnih socijalnih odnosa i višom socijalnom podrškom imaju ujedno bolje komunikacijske vještine te bolju zaštitu od stresa, dobivaju više emocionalne pažnje, podrške te povratnih informacija na izvedbu, što ih štiti od problema mentalnog zdravlja (više u Harandi et al., 2017).

### *Sukob interesa*

Nemamo sukoba interesa za prijavljivanje.

### Izjava o dostupnosti podataka

Podaci su dostupni na lični zahtev kontaktiranjem autora rada.

### Literatura

- Allen, N. B., & Badcock, P. B. (2003). The social risk hypothesis of depressed mood: evolutionary, psychosocial, and neurobiological perspectives. *Psychological Bulletin*, 129 (6), 887. <https://doi.org/10.1037/0033-2909.129.6.887>
- American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). <https://doi.org/10.1176/appi.books.9780890425787>
- Auerbach, R.P., Mortier, P., Bruffaerts, R., Alonso, J., Benjet, C., Cuijpers, P., Demyttenaere, K., Ebert, D.D., Green, J.G., Hasking, P., Murray, E., Nock, M.K., Pinder-Amaker, S., Sampson, N. A., Stein, D.J., Vilagut, G., Zaslavsky, A.M. & Kessler, R.C. (2018). WHO WMH-ICS Collaborators. WHO World Mental Health Surveys International College Student Project: Prevalence and distribution of mental disorders. *The Journal of Abnormal Psychology*, 127(7), 623–638. <https://doi.org/10.1037/abn0000362>
- Batmaz, S., Kocbiyik, S. & Yuncu, O. A. (2015). Turkish version of the cognitive distortions questionnaire: psychometric properties. *Depression Research & Treatment*, 2015, 1-8. <https://doi.org/10.1155/2015/694853>
- Beck, A. T. (1976). *Cognitive Therapy and the Emotional Disorders*. International Universities Press, Oxford.
- Bertha, E. A. & Balázs, J. (2013). Subthreshold depression in adolescence: A systematic review. *European Child & Adolescent Psychiatry*, 22, 589–603. <https://doi.org/10.1007/s00787-013-0411-0>
- Burns, D. D. (1999). *The Feeling Good Handbook, Revised Edition*. Penguin Books.
- Burušić, J. (2009). *Samopredstavljanje: Taktike i stilovi*. Naklada Slap.
- Chirmore, S., Betzelberger, E., Bier, L. & Camacho, T. (2011). *Twelve-step recovery in inpatient treatment for Internet addiction*. In K. S. Young i C. N. de Abreu (Eds.), *Internet addiction: A handbook and guide to evaluation and treatment* (pp. 205–222).
- Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope, & F. R. Schneier (Eds.), *Social phobia: Diagnosis, assessment, and treatment* (pp. 69–93). The Guilford Press.

- Danneel, S., Nelemans, S., Spithoven, A., Bastin, M., Bijttebier, P., Colpin, H., Van Den Noortgate, W., Van Leeuwen, K., Verschueren, K. & Goossens, L. (2019). Internalizing Problems in Adolescence: Linking Loneliness, Social Anxiety Symptoms, and Depressive Symptoms Over Time. *Journal of Abnormal Child Psychology*, 47(10), 1691-1705. <https://doi.org/10.1007/s10802-019-00539-0>
- De Jong Gierveld, J. & Van Tilburg, T. G. (2006). A 6-Item Scale for Overall, Emotional, and Social Loneliness: Confirmatory Tests on Survey Data. *Research on Aging*, 28(5), 582–598. <https://doi.org/10.1177/0164027506289723>
- De Jong-Gierveld, J. & Van Tilburg, T. G. (1999). *Manual of the Loneliness Scale*. Methoden en technieken. <https://doi.org/10.17605/osf.io/u6gck>
- Demir, Y. & Kutlu, M. (2016). The Relationship between Loneliness and Depression: Mediation Role of Internet Addiction. *Educational Process: International Journal*, 5(2), 97- 105. <http://dx.doi.org/10.12973/edupij.2016.5.2.1>
- Fung, K., Paterson, D. & Alden, L. E. (2017). Are social anxiety and loneliness best conceptualized as a unitary trait? *Journal of Social and Clinical Psychology*, 36(4), 335–345. <https://doi.org/10.1521/jscp.2017.36.4.335>
- Hamamci, Z. & Büyüköztürk, Ş. (2004). The interpersonal cognitive distortions scale: development and psychometric characteristics. *Psychological Reports*, 95(1), 291-303. <https://doi.org/10.2466/pr0.95.1.291-303>
- Hamamci, Z. & Duy, B. (2007). The Relationship Among Social Skills, Dysfunctional Attitudes, Irrational Beliefs, Interpersonal Cognitive Distortions and Loneliness. *Eurasian Journal of Educational Research*, 7 (26), 121-130. <https://www.semanticscholar.org/paper/The-Relationship-Among-Social-Skills%2C-Dysfunctional-Hamamci-Duy/9fa3b1a42834e05e7a285b45aecdc8c8fb42177d>
- Harandi, T. F., Taghinasab, M. M. & Nayeri, T. D. (2017). The correlation of social support with mental health: A meta-analysis. *Electron Physician*, 9 (9), 5212-5222. <https://doi.org/10.19082/5212>
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.
- Hochberg, Z. E., & Konner, M. (2020). Emerging Adulthood, a Pre-adult Life-History Stage. *Frontiers in Endocrinology*, 10, 918. <https://doi.org/10.3389/fendo.2019.00918>

- Hu, L. T. & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6 (1), 1-55.  
<https://doi.org/10.1080/10705519909540118>
- JASP Team (2024). *JASP (Version 0.19.0)* [Computer software]. <https://jasp-stats.org/>
- Kim, H. Y. (2013). Statistical notes for clinical researchers: assessing normal distribution using skewness and kurtosis. *Restorative Dentist & Endodontics*, 38(1), 52-4.  
<https://doi.org/10.5395/rde.2013.38.1.52>
- Kraav, S. L., Lehto, S. M., Junttila, N., Ruusunen, A., Kauhanen, J., Hantunen, S. & Tolmunen, T. (2021). Depression and loneliness may have a direct connection without mediating factors. *Nordic Journal of Psychiatry*, 75 (7), 553-557.  
<https://doi.org/10.1080/08039488.2021.1894231>
- Kuru, E., Safak, Y., Özdemir, İ., Tulacı, R. G., Özdel, K., Özkula, N. G. & Örsel, S. (2018). Cognitive distortions in patients with social anxiety disorder: Comparison of a clinical group and healthy controls. *The European Journal of Psychiatry*, 32(2), 97–104. <https://doi.org/10.1016/j.ejpsy.2017.08.004>
- Kuzucu, Y., Sariot Ertürk, Ö., Simşek, Ö. F. & Gökdaş, İ. (2020). Cognitive Distortions & Problematic Internet Use Connection: Examining The Mediator Roles Of Loneliness And Social Anxiety By Partialling Out The Effects Of Social Desirability. *Journal of Evidence-Based Psychotherapies*, 20, 51-76.  
<https://doi.org/10.24193/jebp.2020.1.4>
- Leary, M. R. (1983). Social Anxiousness: The Construct and Its Measurement. *Journal of Personality Assessment*, 47(1), 66-75.  
[http://dx.doi.org/10.1207/s15327752jpa4701\\_8](http://dx.doi.org/10.1207/s15327752jpa4701_8)
- Lieberz, J., Shamay-Tsoory, S.G., Saporta, N., Kanterman, A., Gorni, J., Esser, T., Kuskova, E., Schultz, J., Hurlmann, R. & Scheele, D. (2022). Behavioral and Neural Dissociation of Social Anxiety and Loneliness. *The Journal of Neuroscience*, 42(12), 2570-2583. <https://doi.org/10.1523/jneurosci.2029-21.2022>
- Lim, M. H., Rodebaugh, T. L., Zyphur, M. J. & Gleeson, J. F. M. (2016). Loneliness over time: The crucial role of social anxiety. *Journal of Abnormal Psychology*, 125(5), 620–630. <https://doi.org/10.1037/abn0000162>
- Lipson, S. K., Zhou, S., Abelson, S., Heinze, J., Jirsa, M., Morigney, J., Patterson, A., Singh, M. & Eisenberg, D. (2022). Trends in college student mental health and help-seeking by race/ethnicity: Findings from the national healthy minds study,

2013-2021. *Journal of Affective Disorders*, 306, 138-147.

<https://doi.org/10.1016/j.jad.2022.03.038>

- Matthews, T., Danese, A., Wertz, J., Odgers, C. L., Ambler, A., Moffitt, T. E., & Arseneault, L. (2016). Social isolation, loneliness and depression in young adulthood: A behavioural genetic analysis. *Social Psychiatry and Psychiatric Epidemiology*, 51(3), 339-348. <https://doi.org/10.1007/s00127-016-1178-7>
- Morrison, A. S. & Heimberg, R. G. (2013). Social Anxiety and Social Anxiety Disorder. *Annual Review of Clinical Psychology*, 9(1), 249–274. <https://doi.org/10.1146/annurev-clinpsy-050212-185631>
- Muthén, L. K. & Muthén, B. O. (1998-2011). *Mplus User's Guide*. Sixth Edition. Los Angeles, CA: Muthén & Muthén.
- Nasir, R., Zamani, Z. A., Khairudin, R., Sulaiman, W. S. W., Sani, M. N. M. & Amin, A. S. (2016). Depression, loneliness and cognitive distortion among young unwed pregnant women in Malaysia: counseling implications. *Asian Social Science*, 12(8), 104-109. <https://doi.org/10.5539/ass.v12n8p104>
- Ota, M., Takeda, S., Pu, S., Matsumura, H., Araki, T., Hosoda, N., Yamamoto, Y., Sakakihara, A. & Kaneko, K. (2020). The relationship between cognitive distortion, depressive symptoms, and social adaptation: A survey in Japan. *Journal of Affective Disorders*, 265, 453-459. <https://doi.org/10.1016/j.jad.2020.01.094>
- Perlman, D. & Peplau, L. A. (1981). Toward a Social Psychology of Loneliness. In R. Gilmour, & S. Duck (Eds.), *Personal Relationships: 3. Relationships in Disorder* (pp. 31-56). Academic Press.
- Petak, A., Trbus, M. & Novak, M. (2023, December 7-9). *Interpersonal cognitive distortions among college students* [Poster presentation]. Book of abstracts of 4. International Scientific Conference University. Department of Psychology Catholic University of Croatia, Zagreb, Croatia. <https://www.croris.hr/crosbi/publikacija/prilog-skup/820022>
- Pitman, A., Mann, F. & Johnson, S. (2018). Advancing our understanding of loneliness and mental health problems in young people. *The Lancet Psychiatry*, 5(12), 955-956. [https://doi.org/10.1016/S2215-0366\(18\)30436-X](https://doi.org/10.1016/S2215-0366(18)30436-X)
- Rapee, R. M., Peters, L., Carpenter, L. & Gaston, J. E. (2015). The Yin and Yang of support from significant others: Influence of general social support and partner support of avoidance in the context of treatment for social anxiety

- disorder. *Behaviour Research and Therapy*, 69, 40-47.  
<https://doi.org/10.1016/j.brat.2015.03.012>
- Reitz, E., Deković, M. & Meijer, A. M. (2005). The structure and stability of externalizing and internalizing problem behavior during early adolescence. *Journal of Youth and Adolescence*, 34, 577–588. <https://doi.org/10.1007/s10964-005-8947-z>
- Rodebaugh, T. L., Lim, M. H., Shumaker, E. A., Levinson, C. A. & Thompson, T. (2015). Social anxiety and friendship quality over time. *Cognitive Behaviour Therapy*, 44(6), 502-511. <https://doi.org/10.1080/16506073.2015.1062043>
- Schleider, J. L., Krause, E. D. & Gillham, J. E. (2014). Sequential comorbidity of anxiety and depression in youth: Present knowledge and future directions. *Current Psychiatry Reviews*, 10, 75–87.  
<https://doi.org/10.2174/1573400509666131217010652>
- Sigurvinsdottir, R., Soring, K., Kristinsdottir, K. & Halfdanarson, S. G. (2021). Social Anxiety, Fear of Negative Evaluation, and Distress in a Virtual Reality Environment. *Behaviour Change*, 38 (2), 109-118.  
<https://doi.org/10.1017/bec.2021.4>
- Sontag-Padilla, L., Dunbar, M. S., Ye, F., Kase, C., Fein, R., Abelson, S., Seelam, R. & Stein, B. D. (2018). Strengthening college students' mental health knowledge, awareness, and helping behaviors: The impact of active minds, a peer mental health organization. *Journal of the American Academy of Child and Adolescent Psychiatry*, 57(7), 500–507. <https://doi.org/10.1016/j.jaac.2018.03.019>
- Spithoven, A. W. M., Bijttebier, P. & Goossens, L. (2017). It is all in their mind: a review on information processing bias in lonely individuals. *Clinical Psychology Review*, 58, 97–114. <https://doi.org/10.1016/j.cpr.2017.10.003>
- Sübası, G. (2007). Some variables for social anxiety prediction in college students. *Education and Science*, 32(144), 3-15.  
<http://dx.doi.org/10.12973/edupij.2016.51.3>
- Sušac, N., Rajhvajn Bulat, L. & Rezo, I. (2018, November 7-10). *Značaj Skale depresivnosti, anksioznosti i stresa u procjeni internaliziranih problema kod adolescenata* [Predavanje]. 26. godišnja konferencija hrvatskih psihologa: Kvaliteta života kroz životni vijek: izazovi i preporuke, Sveti Martin na Muri, Hrvatska.
- Tovilović, S. (2004). Latentna struktura skale socijalne anksioznosti i relacije između socijalne anksioznosti i iracionalnih uverenja. *Psihologija*, 35 (1), 63-88.  
<http://dx.doi.org/10.2298/PSI0401063T>

- Trbus, M. & Petak, A. (2024, September 4-6). *De Jong-Gierveld Loneliness Scale – Description of Student Loneliness and Psychometric Properties of the Scale* [Poster presentation]. New age of CBT - Challenges and perspectives, Belgrade, Serbia.
- Wardle, J., Steptoe, A., Gulis, G., Sartory, G., Sek, H., i Todorova, I. (2004). Depression, Perceived Control, And Life Satisfaction In University Students From Central-Eastern And Western Europe. *International Journal of Behavioral Medicine*, 11(1), 27-36. [http://dx.doi.org/10.1207/s15327558ijbm1101\\_4](http://dx.doi.org/10.1207/s15327558ijbm1101_4)
- Watson, D. & Friend, R. (1969). Measurement of social-evaluative anxiety. *Journal of Consulting And Clinical Psychology*, 33(4), 448.
- Weiss, RS. (1973). *Loneliness: the experience of emotional and social isolation*. The MIT Press.
- Wong, Q. J., Gregory, B., Gaston, J. E., Rapee, R. M., Wilson, J. K., & Abbott, M. J. (2017). Development and validation of the Core Beliefs Questionnaire in a sample of individuals with social anxiety disorder. *Journal of Affective Disorders*, 207, 121-127. <https://doi.org/10.1016/j.jad.2016.09.020>
- Zhang, X., & Dong, S. (2022). The relationships between social support and loneliness: a meta-analysis and review. *Acta Psychologica*, 227, 103616. <https://doi.org/10.1016/j.actpsy.2022.103616>
- Živčić-Bećirević, I., Smojver-Ažić, S., Martinac Dorčić, T. & Birovljević, G. (2021). Izvori stresa, depresivnost i akademsko funkcioniranje studenata za vrijeme pandemije COVID-19. *Društvena Istraživanja*, 30 (2), 291-312. <https://doi.org/10.5559/di.30.2.06>

.....



# Interpersonal cognitive distortions as a mediator for the effects of social anxiety and depression on loneliness among college students

Ana Petak<sup>1,2</sup> 

<sup>1</sup> Faculty of Education and Rehabilitation Sciences, University of Zagreb, Croatia

<sup>2</sup> Faculty of Croatian Studies, University of Zagreb, Croatia

## ABSTRACT

The aim of the research was to verify whether interpersonal cognitive distortions underlie the relationship of social anxiety and depression symptoms with loneliness among student population. The data of 228 students from various studies in the Republic of Croatia were collected, mostly students who attend programs in social sciences (72.8%) and undergraduate students (74.1%). The research was conducted online. Participants completed *The Depression, Anxiety and Stress Scale*, *The Loneliness Scale*, *The Interpersonal Cognitive Distortion Scale*, and *The Interaction Anxiety Scale*. Through two mediation regression analyses, loneliness is separately predicted based on social anxiety and depressive symptoms, with the verification of the mediation effect of interpersonal cognitive distortions. In addition, two more mediation regression analyzes were conducted to control the effects of depressive symptoms in the model in which the predictor was social anxiety and to control the effects of social anxiety in the model in which the predictor was depressive symptoms. Social anxiety in addition to interpersonal cognitive distortions explains 26.8% of the variance of loneliness, and depressive symptoms in addition to interpersonal cognitive distortions explains 29.7% of the variance of loneliness. Partial mediation was established in both analyses, i.e. social anxiety and depressive symptoms predict loneliness directly, and indirectly through interpersonal cognitive distortions. The results are discussed in the context of the existing literature, along with suggestions for practical implications in counseling work.

**Keywords:** loneliness, social anxiety, depressive symptoms, cognitive distortions, students





## Acknowledgment of Reviewers

The Editorial board of the *Primenjena psihologija* journal would like to thank the following colleagues who dedicated their time and effort during the peer-review process in 2024:

Aleksandar Tomašević	Department of Sociology, Faculty of Philosophy, University of Novi Sad, Serbia
Aleksandra Kovač	Oncology Institute of Vojvodina, Sremska Kamenica, Serbia
Ana Genc	Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia
Ana Marija Vejnović	Faculty of Medicine, University of Novi Sad, Serbia
Antun Palanović	Department of Psychology, Faculty of Humanities and Social Sciences, University of Zagreb, Croatia
Anja Wertag	Institute of Social Sciences Ivo Pilar, Zagreb, Croatia
Biljana Jaredić	Department of Psychology, Faculty of Philosophy, University of Priština in Kosovska Mitrovica, Serbia
Bojan Janičić	Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia
Bojana Bodroža	Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia
Bojana M. Dinić	Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia
Dejan Đorđić	Faculty of Education, University of Novi Sad, Serbia
Dušanka Mitrović	Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia
Dušana Šakan	Faculty of Legal and Business Studies Dr Lazar Vrkatić, Novi Sad, Serbia

Đerđi Erdeš Kavečan	Faculty of Organizational Studies „Eduka“, Belgrade, Serbia
Filip Nenadić	Faculty of Media and Communication, Singidunum University, Belgrade, Serbia
Hanif Akhtar	Universitas Muhammadiyah Malang, Malang, East Java
Ilija Milovanović	Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia
Ivana Jakšić	Faculty of political science, University of Belgrade, Serbia
Ivana Novakov	Faculty of sport and psychology, Novi Sad, Serbia
Ivana Vrselja	Department of Psychology, Catholic University of Croatia, Croatia
Ivica Milarić	Academy of Arts, University of Novi Sad, Serbia
Jasmina Pekić	Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia
Jasminka Despot Lučanin	Department of Psychology, Faculty of Croatian Studies, University of Zagreb, Croatia
Jelena Šakotić Kurbalija	Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia
Jelica Petrović	Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia
Jelisaveta Todorović	Department of Psychology, Faculty of Philosophy, University of Niš, Serbia
Kristina Randelović	Department of Psychology, Faculty of Philosophy, University of Niš, Serbia
Ljiljana Mihić	Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia
Luna Radević	Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia
Marija Volarov	Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia
Marija Zotović Kostić	Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia

---

Marija Šarić Drnas	Faculty of Teacher Education, University of Zagreb, Croatia
Milan Oljača	Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia
Milica Lazić	Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia
Milica Ninković	Department of Psychology, Faculty of Philosophy, University of Belgrade, Serbia
Milica Popović Stijačić	Faculty of Media and Communication, Singidunum University, Belgrade, Serbia
Milica Vukelić	Department of Psychology, Faculty of Philosophy, University of Belgrade, Serbia
Nada Padejski Šekerović	Faculty of sport and psychology, Novi Sad, Serbia
Neda Janičijević	Department of Psychology, Faculty of Philosophy, University of Belgrade, Serbia
Nikola Ćirović	Department of Psychology, Faculty of Philosophy, University of Niš, Serbia
Oreste De Rosa	University of Campania "Luigi Vanvitelli", Caserta, Italy
Radomir Belopavlović	Department of psychology, Faculty of Philosophy, University of Novi Sad, Serbia
Sanja Batić Očovaj	Faculty of Legal and Business Studies Dr Lazar Vrkatić, Novi Sad, Serbia
Siniša Lakić	Department of Psychology, Faculty of Philosophy, University of Banja Luka, Bosnia and Herzegovina
Stanislava Popov	Faculty of sport and psychology, Novi Sad, Serbia
Stefan Đorić	Department of Psychology, Faculty of Philosophy, University of Niš, Serbia
Tamara Mohorić	Department of psychology, Faculty of Humanities and Social Science University of Rijeka, Croatia
Tatjana Krstić	Faculty of Medicine, University of Novi Sad, Serbia
Tena Vukasović Hlupić	Department of Psychology, Faculty of Humanities and Social Sciences, University of Zagreb, Croatia

Tina Kavčič	Faculty of Health Sciences, University of Ljubljana, Slovenia
Vojana Obradović	Department of psychology, Faculty of Philosophy, University of Novi Sad
Vladimir Takšič	Department of Psychology, Faculty of Humanities and Social Sciences, University of Rijeka, Croatia
Zoran Pavlović	Department of Psychology, Faculty of Philosophy, University of Belgrade, Serbia
Zdenka Novović	Department of psychology, Faculty of Philosophy, University of Novi Sad
Željka Nikolašević	Faculty of Medicine, University of Novi Sad, Serbia