

## RESEARCH ARTICLE

# EXAMINING THE RELATIONSHIP BETWEEN LONELINESS AND DEPRESSION IN UNIVERSITY STUDENTS: THE ROLE OF GENDER AND RESIDENTIAL STATUS ÜNİVERSİTE ÖĞRENCİLERİNDE YALNIZLIK VE DEPRESYON ARASINDAKİ İLİŞKİNİN İNCELENMESİ: CİNSİYET VE İKAMET DURUMUNUN ROLÜ

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*Depresyon, belirgin olumsuz belirtiler ve özellikleri olan yaygın bir ruhsal bozukluktur. Depresif bireyler kendilerini üzgün, isteksiz ve yalnız hissedebilirler. Literatürde depresyon ile yalnızlık arasındaki güçlü ilişkileri ortaya koyan çok sayıda çalışma bulunmaktadır; yalnızlık, depresif belirtilerin gelişiminde önemli bir risk faktörü olarak kabul edilmektedir. Bu araştırmanın amacı, üniversite öğrencilerinde yalnızlık ile depresyon arasındaki ilişkiyi incelemek ve bu ilişkinin cinsiyet ile ikamet durumu gibi sosyal-demografik değişkenler tarafından nasıl etkilendiğini belirlemektir. Bu amaçla, UCLA Yalnızlık Ölçeği ve Beck Depresyon Envanteri lisans ve lisansüstü düzeyde eğitim gören toplam 400 öğrenciye uygulanmıştır. Katılımcılar Uluslararası Saraybosna Üniversitesi ve Kahramanmaraş Sütçü İmam Üniversitesi'nin çeşitli fakültelerinde öğrenim görmektedir. Veriler, korelasyon analizi, bağımsız örneklem t-testi, regresyon ve varyans analizi kullanılarak incelenmiştir. Araştırma sonuçları, depresyon ile yalnızlık arasında istatistiksel olarak anlamlı ve pozitif bir ilişki olduğunu göstermiştir. Sosyo-demografik bulgulara göre, erkek öğrenciler depresyon ve yalnızlık puanlarında kadın öğrencilere göre daha yüksek skorlar elde etmiştir. İkamet durumuna göre ise, yurt dışında yaşayan öğrencilerin yalnızlık düzeyleri, ailesi ile birlikte yaşayan ve kendi ülkesinde kalan öğrencilere kıyasla daha yüksektir.*

**Anahtar Kelimeler:** Depresyon, Yalnızlık, Sosyo-Demografik Değişkenler, İkamet Durumu, Cinsiyet, Üniversite Öğrencileri.

### Abstract

*Depression is a common mental disorder characterized by prominent negative symptoms and features. Individuals experiencing depression may feel sad, unmotivated, and lonely. The literature has documented a strong association between depression and loneliness, with loneliness recognized as a significant risk factor for the development of depressive symptoms. The aim of this study was to examine the relationship between loneliness and depression among university students and to determine how this relationship is influenced by social-demographic variables such as gender and residential status. To this end, the UCLA Loneliness Scale and the Beck Depression Inventory were administered to a total of 400 undergraduate and graduate students. Participants were enrolled in various faculties at the International University of Sarajevo and Kahramanmaraş Sütçü İmam University. Data were analyzed using correlation analysis, independent-samples t-tests, regression, and analysis of variance. The results indicated a statistically significant and positive relationship between depression and loneliness. Regarding social-demographic findings, male students reported higher scores on depression and loneliness compared to female students. In terms of residential status, students living abroad exhibited higher levels of loneliness than those living with their families or remaining in their home country.*

**Key Words:** Depression, Loneliness, Social-Demographic Variables, Residential Status, Gender, University Students

## 1. Introduction

College students are in a transitional life stage that can increase susceptibility to mental health issues, including depression. Depression refers to sorrow; lack of self-worth, low energy, guilt, life looks dark and difficult to challenge (Comer, 2010). Depression is one of the emotional disorders which are pervasive and dangerous. As World Health Organization (WHO) expresses, recently depression is the fourth disorder which is pioneering reason of defectiveness all around the world, which is considered that by 2020 that disorder will be the second that is causing defectiveness (Kessler & Bromet, 2013). Whereby its inauspicious affects on someone's spiritual, psychological, as well biological wellbeing, depression damages routine performance and interrupt sort of life. Depression has been linked up unfavorable health consequences containing cardiac disorders, self distraction, and declining life anticipation. Some issue that could decrease its harmful impacts on mental sanitary and health care is very crucial (Baetz et al., 2004).

Loneliness is an indicator that an individual's social communication and interactions are significantly inadequate. It is an unpleasant emotional experience that occurs when a person's network of meaningful social connections is insufficient in both quality and quantity (Peplau & Perlman, 1982). The concept of loneliness can be divided into three main components. First, loneliness is a highly personal and subjective experience; it is not equivalent to objective social isolation. In this sense, aloneness and loneliness represent distinct phenomena (Peplau, 1988). Second, loneliness arises from a deficiency in social relationships. It occurs when there is a discrepancy between an individual's actual social relationships and their desired or expected level of social connection. This mismatch has been conceptualized in various ways. Some researchers (e.g., Weiss, 1973; Peplau, 1988) argue that loneliness reflects the unmet essential human need for closeness and attachment. Others (e.g., Peplau & Perlman, 1982; Peplau, 1988) emphasize a more cognitive perspective, suggesting that individuals evaluate their relationships based on perceived quality, type, and quantity.

In conclusion, loneliness is not a desirable or positive condition. Although it may, in some cases, contribute to personal growth, the experience of loneliness is typically distressing. Individuals who feel lonely often experience depression, anxiety, boredom, helplessness, or hopelessness. Loneliness is rarely associated with happiness or well-being.

Furthermore, loneliness can manifest in different forms and intensities among individuals. In this context, Cacioppo et al. (2002) noted that loneliness does not necessarily equate to physical isolation; an individual may feel lonely even in a crowded environment, whereas another may spend long periods alone without feeling lonely. Similarly, John et al. (1982) defined loneliness as a painful emotional state resulting from a discrepancy between desired and actual levels of social contact. Peplau and Perlman (1982) also identified several factors contributing to loneliness, including changes in social networks, the loss of significant relationships, separation from personal connections, deficits in social skills, and personality traits such as rejection sensitivity and anxiety. Research suggests that depression is prevalent in this population worldwide and in Türkiye. For example, a study found that approximately 27% of college students reported moderate or higher levels of depressive symptoms (Bayram & Bilgel, 2008). This prevalence is alarming and underscores the need to understand the factors contributing to student depression. Social variables have attracted attention as important predictors, with loneliness emerging as a particularly important factor. Loneliness is a distressing subjective feeling resulting from a discrepancy between desired and actual social relationships. Chronic loneliness has been associated with increased stress and poor sleep and may increase depression and anxiety (American Psychological Association (APA) (2019)). Indeed, numerous studies have documented a significant association between loneliness and depression in young adults (Yang et al., 2023). Another important social factor is the living situation during college. Moving away from family for education can disrupt social support networks and potentially lead to increased loneliness. Students may live in different arrangements some continue to live with their families, others live separately from their families in their home country (e.g. in dormitories or apartments), and many (especially international students) live abroad, away from home. These living conditions can affect social connectedness: those living with their families benefit from daily

support, while those living alone or abroad may face greater social isolation. This study focuses on loneliness (a social variable) and living arrangement (a demographic-social variable) as predictors of depression among university students. By examining a diverse sample of Turkish and international students, we aim to shed light on how these social factors relate to mental health in a university context.

### 1.1. Loneliness and Depression in University Students

Loneliness is increasingly recognized as a significant public health issue on college campuses. It involves feelings of social or emotional isolation, even when surrounded by others, and has a well-established link to depression. Empirical evidence indicates a positive correlation between loneliness and depressive symptoms across age groups and cultures (Yang et al., 2023; Kılınç et al., 2020). This relationship appears bidirectional: chronic loneliness can precipitate depression, while depressive symptoms, such as low mood or low self-esteem, may lead individuals to withdraw socially and feel lonelier (Yang et al., 2023). Longitudinal studies support this link; for example, a 12-year cohort study found that loneliness significantly predicted later increases in depression, accounting for 11–18% of potentially preventable cases (Lee et al., 2021). Psychologically, loneliness contributes to stress dysregulation and hopelessness, which can trigger depressive episodes. According to Baumeister and Leary's (1995) "need to belong" theory, unmet social belonging needs are associated with negative emotional states such as anxiety, sadness, and depression. This relationship has also been supported by subsequent studies in different cultural contexts (e.g., Korkut & Gençtürk, 2020). Recent studies reinforce this connection. Kılınç et al. (2020) reported a significant positive association between loneliness and depression among Turkish college students. Similarly, a network analysis of Chinese students identified specific loneliness-related experiences (e.g., "people are around me but not with me") as centrally connected to depressive symptoms (Yang et al., 2023). Overall, the literature suggests that loneliness is a prominent correlate and risk factor for depression among youth.

### 1.2. Living Situation and Social Support

A student's living situation can significantly influence their social experiences and, consequently, their mental health. Living with family often provides built-in social support and a sense of belonging, while living away from family such as in dormitories or apartments requires students to rely on peers or newly formed social networks. Living abroad introduces additional challenges, including cultural and language barriers, which can impede the development of a supportive social environment. Research indicates that living alone or away from family increases the risk of loneliness. For instance, Zahedi et al. (2022) reported that approximately 26% of college students experience loneliness, with significantly higher levels among those living in dorms compared to those living at home. In this study, dormitory residence was a risk factor for loneliness comparable to other predictors, such as years of study and financial difficulties. Similarly, Korkut and Gençtürk (2020) found a moderate negative correlation ( $r = -.53$ ) between family connectedness and loneliness, indicating that students with stronger family ties experienced lower loneliness levels.

Living situation also intersects with acculturation. International students are particularly vulnerable to loneliness due to separation from familiar social networks and homes. Sawir et al. (2008) observed that loneliness is common among international students, often stemming from language barriers, cultural differences, and the loss of close relationships. More recent data from university counseling centers show that international students are approximately 42% more likely to experience social isolation than domestic students, and socially isolated international students report higher levels of depression and anxiety (Trusty & Chun-Kennedy, 2023). By contrast, students who remain in their home country, especially those living with family, can more easily maintain social connections, share a common language and culture with peers, and reduce long-term loneliness through family contact. In summary, research consistently demonstrates a gradient in loneliness: students living abroad report the highest levels, followed by students living away from home, and finally students living with family, with implications for mental health outcomes that warrant further examination.

### 1.3. Depression and University Student Mental Health

Depression is one of the most common mental health problems among college students, affecting academic performance, physical health, and quality of life. The college years overlap with late adolescence and early adulthood, when many mental disorders (including depression) first emerge. Numerous studies have highlighted high rates of depressive symptoms in student populations. Globally, estimates of the prevalence of depression in college students vary but are generally higher than in the general young adult population due to academic pressures and transitional difficulties. As noted in Türkiye, for example, research has shown that approximately one-quarter of university students report moderate to severe depressive symptoms. In a large sample of 1,617 students assessed with the DASS-42, 27.1% exhibited depression of moderate severity or higher (Bayram & Bilgel, 2008). Common stressors such as challenging coursework, financial concerns, and uncertainty about the future may contribute to these high rates. In addition, the transition to college often involves significant social changes students may relocate, leaving behind family and childhood friends. This transition may precipitate feelings of loneliness or lack of belonging, which can fuel depression, as discussed. A study conducted in Türkiye by Bayram and Bilgel (2008) found significant levels of depression in students, and also noted that younger students (freshmen and sophomores) showed higher depression scores than seniors, which may be due to the more stressful early adaptation period at university. Mental health professionals increasingly recognize that social well-being is an important component of student mental health. Lack of social support and feelings of isolation are consistently associated with depressive symptoms in this demographic group (Kılınç et al. 2020). Conversely, students who report satisfying social relationships and support (whether from family or friends) tend to have better mental health and lower depression. In short, university student mental health cannot be separated from the social context: depression in students is often accompanied by social isolation or loneliness, suggesting that interventions targeting social connection may be effective in improving student well-being.

Epidemiological research consistently indicates that the prevalence of depression is higher among women than men, and this gender difference represents a stable pattern across cultures (Bromet et al., 2011). From adolescence through the reproductive years, women are at significantly greater risk for major depressive disorder (MDD) compared with men, with lifetime prevalence rates of approximately 21.3% for women and 12.9% for men (Kessler et al., 1993). Several theoretical perspectives have been proposed to explain this disparity, including those emphasizing sex differences in biological vulnerability, greater interpersonal orientation and affiliative needs, as well as gender-related differences in emotional reactivity and emotion regulation processes (Nolen-Hoeksema & Jackson, 2001).

### 1.4. Recent Studies about Depression and Loneliness

Recent research between has consistently demonstrated that loneliness and depression share a robust bidirectional relationship, suggesting that each can both predict and reinforce the other over time. Meta-analytic and longitudinal evidence indicates that loneliness significantly increases the risk of developing depressive symptoms, while depression, in turn, predicts heightened loneliness in subsequent periods (Mann et al., 2022; Chen et al., 2023). Large-scale cross-lagged panel models and longitudinal analyses across diverse age groups have confirmed this reciprocal effect, revealing that individuals who experience higher loneliness levels are more likely to develop depressive symptoms later, and vice versa (de Maio Nascimento et al., 2024; Grygiel et al., 2024). These effects are observed not only in general population samples but also in clinical populations, including individuals with psychotic disorders and those experiencing chronic mental health conditions, highlighting the pervasive nature of this relationship (Grygiel et al., 2024).

Moreover, genetic studies employing Mendelian randomization techniques provide additional support for a potential causal pathway from loneliness to depression, indicating that genetic predispositions toward loneliness may increase vulnerability to depressive disorders (Sbarra et al., 2023; Zhu et al., 2024). Consistent with this evidence, findings from cross-cultural and longitudinal research



suggest that the association between loneliness and depression is robust across diverse populations and cultural contexts (de Maio Nascimento et al., 2024).

Although methodological differences, such as variations in measurement tools, sample characteristics, and analytic models, introduce some heterogeneity, the converging findings emphasize that loneliness is not only an emotional state but also a psychological risk mechanism that perpetuates depressive experiences. For instance, research highlights that perceived social support, quality of relationships, and individual coping styles can moderate this relationship, indicating potential avenues for targeted interventions (Buecker et al., 2024). Additionally, studies conducted during the COVID-19 pandemic have underscored the exacerbating role of social isolation on both loneliness and depressive symptoms, demonstrating how environmental stressors may amplify these effects (Gabarrell-Pascuet et al., 2023).

Recent literature continues to emphasize a well-established association between loneliness and depressive disorders. Cooper and De Souza (2023) reviewed recent empirical findings and concluded that both loneliness and social isolation function as significant psychological risk factors for the onset and maintenance of depressive symptoms. Their narrative review further suggested that perceived loneliness, rather than objective social isolation, is more consistently associated with depression. The authors also discussed potential biological mechanisms underlying this relationship, including dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis and increased inflammatory activity. Importantly, Cooper and De Souza (2023) argued that interventions targeting loneliness and promoting social connectedness may play a valuable role in the prevention and treatment of depression.

These findings collectively underscore the importance of addressing loneliness in both preventive and therapeutic approaches to depression. Strategies aimed at enhancing social connectedness, fostering supportive relationships, and improving social skills may function as protective factors against depressive symptomatology. In addition, early identification of loneliness may help reduce the risk of the onset or exacerbation of depressive disorders (Mann et al., 2022; Chen et al., 2023; Gabarrell-Pascuet et al., 2023; Steiner et al., 2022). Future research should continue to examine the mechanisms underlying the bidirectional relationship between loneliness and depression, including biological, cognitive, and social pathways, to inform more targeted and effective interventions.

## 2. Problem Statement

Depression, loneliness, and social isolation are increasingly recognized as significant mental health concerns among university students. The literature indicates a strong and reciprocal relationship between loneliness and depression, whereby loneliness can act as a risk factor for the development of depressive symptoms, and depression can exacerbate feelings of loneliness by weakening social connections. However, there is limited understanding of how social-demographic factors, such as gender and residential status, influence this relationship. In particular, students living away from their families or studying abroad face additional challenges, including cultural adaptation, language barriers, and reduced social support, which may heighten levels of loneliness and depression. In this context, examining the relationship between loneliness and depression, and assessing the roles of gender and residential status, is crucial for informing targeted psychological interventions and preventive programs for university students. Many studies have examined loneliness and depression in isolation or have focused solely on domestic students. Fewer have simultaneously analyzed how living conditions (especially study abroad experience vs. living with family experience) may exacerbate or reduce the risk of depression through loneliness. In a multicultural university environment that includes both domestic (Turkish) and international students, it is important to understand whether students living away from their families (especially those living abroad) are at higher risk for depression and to what extent loneliness explains this risk. This study aims to address this gap by examining the extent to which social variables (primarily loneliness and living conditions) predict levels of depression among university students. The primary research questions are: (1) Is there a significant relationship between loneliness and depression among university students? (2) Do female students report higher levels of depression and loneliness compared to male students? (3) Do students' levels of depression and loneliness differ according to living conditions (with family, at home or abroad)? and (4) Is living abroad associated with higher loneliness (and therefore higher depression) compared to other groups? We hypothesize that

higher loneliness will be associated with higher depression scores and that students living abroad (away from family support and their home culture) will report more loneliness than those living in their home countries with or without their families. By exploring these questions, the study aims to contribute to a better understanding of how social context and support (or lack thereof) shape mental health outcomes in university students. The findings are expected to inform university mental health services and policy makers about the importance of social factors in preventing and addressing depression in this population.

### 3. Method

#### 3.1. Participants and Design

400 volunteers were recruited from undergraduate classes at two institutions: Kahramanmaraş Sütçü İmam University in Turkey and the International University of Sarajevo in Bosnia and Herzegovina. The Beck Depression Inventory (BDI) and the Loneliness Scale (UCLA) were employed as primary measurement tools. Each participant completed an 41-item survey, which included the 21-item BDI, the 20-item Loneliness Scale (UCLA) and a brief 3-item demographic questionnaire. To examine the impact of living situation, participants were categorized into three groups based on their current residence status: (1) students living with their family (e.g., residing at the family home while attending university locally), (2) students living in their home country without family (for Turkish students, this typically meant living in campus dormitories or rental accommodation away from their hometown; for international students, this category would include those from elsewhere in Turkey living away from their family within Turkey), and (3) students living abroad (students who moved to Turkey from another country for their studies, thus living outside their country of origin and away from family). This grouping allowed for comparisons in loneliness and depression across differing levels of familial proximity and cultural familiarity.

A convenient sample of 400 undergraduate and graduate students were administered a set of inventories. A verbal assent to freely participate in the survey obtained from all students.

**Table 1.**

*Distribution of gender among the participants of the research*

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Female	241	60,3	60,3	60,3
Male	159	39,8	39,8	100,0
Total	400	100,0	100,0	

Table 1 represents the distribution of gender among participants. 39,8 % of the participants (159) are male and 60,3 % of the participants (241) are female.

**Table 2.**

*Distribution of residency status among the participants of the research*

Living condition	Frequency	Percent	Valid Percent	Cumulative Percent
living with family	124	31,0	31,0	31,0
living without family but in domestic country	146	36,5	36,5	67,5
living abroad	130	32,5	32,5	100,0
Total	400	100,0	100,0	

Table 2 represents the distribution of residency status among participants. 31% of the participants (124) are students who live with their family, 36,5% of the participants (146) are students living their country but without family, 32,5% of the participants (130) are students living abroad during education period.

#### 3.2. Research Questions

- RQ1: Is there a relationship between loneliness and depression among university students?
- RQ2: Do female students report higher levels of depression and loneliness compared to male students?
- RQ3: Do students' loneliness levels differ significantly based on their living situation, specifically among those living with their families, living away from their families within the country, and living abroad?
- RQ4: Do students' depression levels differ significantly based on their living situation, specifically among those living with their families, living away from their families within the country, and living abroad?

### 3.3. Measures

**Depression:** Depression levels were measured using the Beck Depression Inventory (BDI), a widely used self-report questionnaire for assessing the severity of depressive symptoms. The BDI (Beck, Steer, & Brown, 1996) contains 21 items, each describing a symptom of depression (such as sadness, pessimism, fatigue, etc.), which respondents rate on a scale from 0 (not present) to 3 (severe). Total scores range from 0 to 63, with higher scores indicating more severe depressive symptomatology. The BDI has been extensively validated in different populations and has high internal consistency. In this study, the BDI demonstrated excellent reliability (Cronbach's  $\alpha = 0.89$ ). A validated Turkish translation of the BDI was used for Turkish participants (BDI-Turkish; Hisli, 1989 provided evidence of its validity and reliability in Turkish student samples). Example items include statements like "I feel sad" or "I have lost interest in things," which students endorse based on their feelings over the past two weeks.

**Loneliness:** Loneliness was assessed using the UCLA Loneliness Scale (Version 3), developed by Russell and colleagues. This instrument consists of 20 items that capture subjective feelings of social isolation and dissatisfaction with one's social interactions (e.g., "I feel isolated from others"). Respondents rate each item on a Likert scale (often 1 = never, 4 = often), and total scores range from 20 (not lonely) to 80 (extremely lonely). The UCLA Loneliness Scale is one of the most established measures of loneliness; Russell et al. (1978) originally introduced it, and it was later revised in 1980. We used a Turkish-translated version of the UCLA scale, which has been shown to be valid and reliable in Turkey. In fact, Demir (1989) conducted the Turkish adaptation and reported high internal consistency (Cronbach's  $\alpha$  around 0.90) and strong test-retest reliability for Turkish college students. In our sample, the UCLA Loneliness Scale also showed very good reliability (Cronbach's  $\alpha = 0.86$ ).

**Demographic and Social Data.** A background questionnaire collected information on demographics (gender, year of study, and details about the student's living situation). Importantly, students indicated whether they were living with family, living on their own/in dorm within their home country, or living abroad.

### 3.4. Procedure

Participants were recruited through campus-wide announcements and classrooms. After providing informed consent, students completed an anonymous survey packet. For Turkish students, surveys were administered in Turkish. The survey took approximately 15–20 minutes to complete and was typically completed in a classroom setting or online via a secure survey platform. Participation was voluntary, and respondents were assured of confidentiality and that their responses would be used only for research purposes. No personally identifying information was collected beyond basic demographics.

### 3.5. Data Analysis

After data collection, surveys were scored according to the test manuals. Each participant received a total BDI score (for depression level) and a total UCLA Loneliness score. Normality was assessed according to the guidelines provided by George and Mallery (2010), using a  $\pm 2$  range for skewness and kurtosis values. Since the data fell within this range, parametric tests were deemed appropriate for the analyses. Data were analyzed using SPSS 25.0. First, descriptive statistics were calculated for all key variables, and assumption checks were performed. The primary analyses were as follows: (Büyüköztürk, 2020).

- **Correlation Analysis:** A Pearson product-moment correlation was computed to assess the relationship between loneliness and depression scores across the whole sample. This tested our hypothesis regarding the association between higher loneliness and higher depression.
- **Groping Statistic:** Independent sample the test has applied to examine differences between male and female students.
- **Group Comparisons:** A one-way analysis of variance (ANOVA) was conducted to examine differences in loneliness scores across the three living situation groups (with family, away-domestic, abroad). Post-hoc comparisons (Tukey's HSD) were used to identify which groups differed significantly. Although our focus was on loneliness differences by living situation, for completeness we also checked for differences in depression scores by living situation using ANOVA.
- **Regression (Exploratory):** Additionally, we conducted a multiple regression analysis to see how well loneliness and living situation together predict depression. In this regression, BDI score was the dependent variable, and UCLA score and dummy-coded living situation (with "living with family" as reference category) were independent variables. This exploratory analysis was intended to quantify the predictive power of these social variables on depression.

Results were considered statistically significant at  $p < .05$  (two-tailed). We report relevant statistics (e.g., Pearson's  $r$ , ANOVA  $F$ -values, degrees of freedom, and effect sizes like  $\eta^2$  for ANOVA) in the results section. All statistical assumptions (normality, homogeneity of variances, etc.) were checked; transformations or nonparametric approaches were not needed as the assumptions were reasonably met in our data.

## 4. Results

### 4.1. Descriptive Findings

**Table 3.**

*Descriptive and normality assumptions*

Measurement	Mean	Sd	Min.	Max.	Skewness	Kurtosis
BDI	14.03	10.08	.00	55	1.109	1.163
LONELINESS	38.08	9.69	20	65	.276	-.804

Descriptive statistics for the key variables are presented in Table 3. For the Beck Depression Inventory (BDI), the mean score was 14.03 (SD = 10.08), with a minimum of 0 and a maximum of 55. Skewness (1.11) and kurtosis (1.16) values indicated an acceptable distribution within the  $\pm 2$  range. For Loneliness, the mean score was 38.08 (SD = 9.69), ranging from 20 to 65, with skewness of 0.28 and kurtosis of -0.80, also within the acceptable  $\pm 2$  range. Based on these results, the data met the assumptions for parametric analyses (George & Mallery, 2010).

**Table 4.**

*Correlation Between Loneliness and Depression*

		BDI	LONELINESS
BDI	Pearson Correlation	1	.502**
	Sig. (2-tailed)		.000
	N	400	400
LONELINESS	Pearson Correlation	.502**	1
	Sig. (2-tailed)	.000	
	N	400	400

\*\*. Correlation is significant at the 0.01 level (2-tailed)

As hypothesized, loneliness was significantly positively correlated with depression. The Pearson correlation between UCLA Loneliness scores and BDI depression scores was  $r = 0.50$  ( $p < .001$ ). This correlation coefficient suggests a high positive relationship: students who reported higher loneliness



tended to have higher depression scores. The 95% confidence interval for  $r$  did not include zero, confirming statistical significance.

#### 4.2. Regression Analysis

**Table 5.**

*Model Summary*

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.502 <sup>a</sup>	.252	.250	8.72895

a. Predictors: (Constant), LONELINESS

**Table 6.**

*Regression Analysis*

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10214.982	1	10214.982	134.064	.000 <sup>b</sup>
	Residual	30325.455	398	76.195		
	Total	40540.438	399			

a. Dependent Variable: BDI

b. Predictors: (Constant), LONELINESS

In an exploratory regression loneliness accounted for 25% of the variability in the BDI measure of depression,  $R^2$  adjusted = .25 adjusted,  $F(1,398) = 134.06$  ( $p < .001$ ). The regression line accounted for more variation than error which means that linear combination of the predictors is useful for understanding depression.

#### 4.3. Loneliness Levels by Living Situation

**Table 7.**

*Differences in Loneliness by Living Situation Anova Analysis*

ANOVA					
LONELINESS					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4159.580	2	2079.790	24.817	.000
Within Groups	33270.697	397	83.805		
Total	37430.278	399			

**Table 8.**

*Multiple Comparisons*

(I) Livingcondition	(J) Livingcondition	Mean Difference (I-J)	Std. Error	Sig.
living with family	living without family but in domestic country	-.62086	1.11797	.844
	living abroad	-7.19926*	1.14913	.000
living without family but in domestic country	living with family	.62086	1.11797	.844
	living abroad	-6.57840*	1.10393	.000
living abroad	living with family	7.19926*	1.14913	.000
	living without family but in domestic country	6.57840*	1.10393	.000

A one-way ANOVA was conducted to assess whether loneliness scores differed significantly across the three living conditions: living with family, living without family but in the domestic country, and living abroad. The analysis revealed a statistically significant difference among the groups,  $F(2, 397) = 24.82$ ,  $p < .001$ . With an eta squared value of 0.111, indicating a medium-to-large effect size. This means that living condition accounted for approximately 11% of the variance in loneliness scores, reflecting a meaningful practical difference between the groups.

Post-hoc comparisons using Tukey's HSD test showed that participants living abroad reported significantly higher loneliness scores compared to both those living with family (Mean Difference = 7.20,  $p < .001$ ) and those living without family but in the domestic country (Mean Difference = 6.58,  $p < .001$ ). There was no statistically significant difference between the living with family and living without family but in the domestic country groups ( $p = .844$ ).

These findings indicate that living abroad is associated with markedly higher levels of loneliness, whereas living arrangements within the same country whether with or without family do not significantly differ in terms of loneliness.

#### 4.4. Depression Levels by Living Situation

**Table 9.**

*Depression Levels by Living Situation Anova*

ANOVA					
BDI					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	629.254	2	314.627	3.130	.045
Within Groups	39911.183	397	100.532		
Total	40540.438	399			

**Table 10.**

*Multiple Comparisons*

(I) Livingcondition	(J) Livingcondition	Mean Difference (I-J)	Std. Error	Sig.
living with family	living without family but in domestic country	-.92046	1.00123	.736
	living abroad	-3.05186	1.34622	.071
living without family but in domestic country	living with family	.92046	1.00123	.736
	living abroad	-2.13140	1.33532	.300
living abroad	living with family	3.05186	1.34622	.071
	living without family but in domestic country	2.13140	1.33532	.300

A one-way ANOVA was conducted to examine whether depression scores (BDI) differed significantly across the three living conditions: living with family, living without family but in the domestic country, and living abroad. The results indicated a statistically significant overall difference among the groups,  $F(2, 397) = 3.13$ ,  $p = .045$ . with an eta squared value of 0.016, representing a small effect size. This suggests that although the group differences reached statistical significance, the proportion of variance in depression scores explained by living condition was relatively small.

Post-hoc comparisons were performed using Tamhane's T2 test due to unequal variances. The analysis revealed that none of the pairwise group differences reached statistical significance at the  $p <$

.05 level. However, there was a borderline difference between participants living abroad and those living with family ( $p = .071$ ), with the former group reporting higher depression scores on average.

These findings suggest that while there is a significant overall variation in BDI scores across living conditions, the specific pairwise differences are not statistically conclusive, although the trend indicates higher depression scores among participants living abroad.

Overall, these findings suggest that living abroad is strongly associated with higher loneliness and may also be linked to higher depression, although the latter relationship did not reach conventional levels of statistical significance in pairwise comparisons.

#### 4.5. Grouping Analysis

**Table 11.**

*Gender Grouping Analysis*

Group Statistics	gender	N	Mean	Std. Deviation
BDI	female	241	12.6417	8.33634
	Male	159	16.1635	11.99571
LONELINESS	female	241	36.7375	9.43830
	Male	159	40.1321	9.75271

**Table 12.**

*Independent Samples Test*

		F	Sig.	t	df	Sig. (2-tailed)
BDI	Equal variances assumed	26.009	.000	-3.460	397	.001
	Equal variances not assumed			-3.222	257.830	.001
LONELINESS	Equal variances assumed	1.662	.198	-3.471	397	.001
	Equal variances not assumed			-3.448	330.725	.001

An independent samples t-test was conducted to examine gender differences in depression and loneliness scores. For depression, male participants ( $M = 16.16$ ,  $SD = 11.99$ ) reported significantly higher scores than female participants ( $M = 12.64$ ,  $SD = 8.34$ ),  $t(257.83) = -3.22$ ,  $p = .001$ , 95% CI [-5.67, -1.37]. Levene's test indicated unequal variances for depression scores,  $F = 26.01$ ,  $p < .001$ . For loneliness, males ( $M = 40.13$ ,  $SD = 9.75$ ) also scored significantly higher than females ( $M = 36.74$ ,  $SD = 9.44$ ),  $t(397) = -3.47$ ,  $p = .001$ , 95% CI [-5.32, -1.47], with variances assumed equal,  $F = 1.66$ ,  $p = .198$ . These results indicate that, within this sample, males reported significantly higher levels of both depression and loneliness compared to females.

#### 5. Discussion

This study set out to investigate how social variables particularly loneliness and living arrangements serve as predictors of depression among university students. Overall, our findings align strongly with existing literature and contribute new insights into the specific challenges faced by students living away from their home and family. In this section, we discussed the findings under the following subheadings: (a) Loneliness as a Predictor of Depression, (b) Impact of Living Situation on Loneliness and Depression (c) Gender Differences, (d) Integration with Literature and Theory, (e) Limitations, (f) Practical Implications, and finally Conclusion and Recommendations. Each subsection provides an in-depth analysis of the results, explores their theoretical and empirical relevance, and highlights how they contribute to a broader understanding of the relationship between loneliness and depression.

**Loneliness as a Predictor of Depression:** Consistent with our hypothesis and prior studies, we found a moderate positive correlation between loneliness and depression. Our research question is approved. Students who felt more lonely tended to exhibit more depressive symptoms. This supports a large body of research indicating that loneliness and depression often go hand-in-hand (Yang et al., 2023; Kılınç et al., (2020). Notably, our study reinforces findings from Kılınç et al. (2020), who also reported a positive relationship between loneliness and depression in a Turkish student sample The strength of the

correlation in our data ( $\sim 0.50$ ) is comparable to what other studies have found, typically in the range of  $r = 0.3-0.5$  for adolescents and young adults. This suggests that loneliness is one of the stronger single predictors of depression among the various psychosocial factors. The relationship can be understood in light of psychological theory: loneliness often entails feelings of being unloved or not belonging, which can foster depressive cognition (e.g., “No one cares about me” or “I don’t matter”) leading to symptoms such as sadness and hopelessness. Over time, chronic loneliness may dysregulate biological stress pathways, contributing to depression (APA, 2019). At the same time, being depressed can cause behaviors (withdrawal, lack of energy to socialize) that increase isolation, thus feeding back into loneliness. This cyclical, mutually reinforcing nature of loneliness and depression has been highlighted by recent research. For example, Yang et al. (2023) describe the loneliness–depression link as bidirectional and multifaceted, noting that certain aspects of loneliness (like feeling not understood by those around) can directly trigger core depressive feelings. Our findings, while cross-sectional, are consistent with this notion of a vicious cycle: students who are lonely are at risk of becoming depressed, and depressed students may further isolate themselves, worsening loneliness.

Importantly, loneliness stood out in our regression as the dominant predictor of depression even when accounting for living situation. This underscores that how connected a student feels socially may matter more for their mood than the mere fact of where or with whom they live. In practical terms, interventions that reduce loneliness or increase perceived social support could have significant benefits for preventing or alleviating depression in students. Prior studies have indeed found that improving social support (through counseling groups, peer support programs, etc.) can reduce depressive symptoms in young people, likely by breaking this loneliness–depression loop.

**Impact of Living Situation on Loneliness and Depression:** A key contribution of the present study is the comparison of students across different living arrangements. The results indicate a clear pattern in which students living abroad report higher levels of loneliness than those living with their families, as well as those living away from family within their home country. This finding is conceptually consistent with previous research, as international students are often required to rebuild their social networks in an unfamiliar cultural context. Language barriers, cultural differences, and physical distance from established support systems such as family and long-term friends are likely to contribute to heightened feelings of isolation. These findings are in line with the qualitative work of Sawir et al. (2008), who reported that international students in Australia frequently described profound loneliness and difficulties forming local friendships despite being surrounded by peers on campus. Quantitatively, the results also resonate with the cross-sectional study by Zahedi et al. (2022) conducted in Iran, which found higher levels of loneliness among students residing in dormitories compared to those living with their families. In the present study, living abroad may be conceptualized as a more pronounced form of living away from family, compounded by cultural displacement, which may help explain why this group exhibited the highest loneliness scores.

Interestingly, we did not find a significant difference in loneliness between students living with family and those living away in the same country, after accounting for variance. This could be due to several reasons. First, many domestic students living away from family (e.g., in dorms) still have opportunities to visit home during weekends or breaks, and share the same native language and cultural background with their peers, which may facilitate friendships and reduce loneliness. Turkey, for example, has a collectivist culture where family ties remain strong; even when students move to another city for university, they often maintain close contact with family via phone and return home periodically, mitigating feelings of disconnection. Moreover, universities often provide social structures (orientation programs, student clubs) that help first-year students (who are often those living away from home for the first time) to form communities. Thus, while being away from family in the home country is a change, it may not elevate loneliness to the same extent as the more radical transition of moving abroad. That said, it is also possible that our measurement at one point in time didn’t capture transient spikes in loneliness that domestic students might feel initially after leaving home. Prior research suggests that loneliness in local first-year students may be highest in the initial months and then improve as they integrate into campus life (Zahedi et al., 2022). For international students, the adjustment can be longer and more complex, often spanning several years, which might explain their persistently higher loneliness.

In terms of depression, we observed only a slight, non-significant trend for higher depression among those abroad. This somewhat unexpected result (given their clearly higher loneliness) might indicate that not all lonely international students had become clinically depressed possibly thanks to resilience factors or supportive resources. For instance, students who voluntarily choose to study abroad might have higher baseline resilience or motivation that protects them against depression despite feeling lonely. Universities also often have international student offices or networks that can provide some support. It's also plausible that the sample size or measurement timing wasn't ideal to capture depression differences; maybe a longer time abroad (more years) would show increasing depression if loneliness remains unresolved. Nonetheless, the data suggest that loneliness is a more immediate effect of being abroad than depression. Depression could manifest in a subset of the lonelier students, but not universally. This points to the importance of intervening early on loneliness for students in new environments, to prevent progression to depression.

Our regression analyses suggested that living abroad may retain a small independent association with higher levels of depression even after accounting for loneliness. This residual association may reflect additional stressors related to the experience of living abroad, such as academic challenges associated with language barriers, experiences of discrimination or culture shock, and financial strain, all of which may contribute to depressive symptoms beyond social loneliness. Indeed, international students frequently report unique stressors, and experiences of discrimination, in particular, have been shown to adversely affect mental health among students studying abroad (Trusty & Chun-Kennedy, 2023). Although these factors were beyond the scope of the present study, they warrant careful consideration in future research. Examining a broader range of psychosocial variables including acculturative stress, perceived discrimination, and personality traits such as extraversion alongside loneliness may provide a more comprehensive understanding of depression risk among international students. The results of the study regarding residency status indicated that students who live abroad during their education period tend to experience higher levels of loneliness compared to those who live with their families or remain in their home country. This finding was a predictable outcome of the research. Studying abroad presents unique challenges, as students must adapt to a new environment that differs culturally, linguistically, and socially from their home context. Adapting to a new culture requires effort and time. The customs, values, and social norms of the host country may differ significantly from those of the students' own cultural background. To understand and connect with others, international students first need to become familiar with the culture in which they are living. Additionally, language differences can create communication barriers. Learning a new language is a gradual process, and many students face difficulties interacting effectively with local people. Another factor contributing to loneliness among students abroad is physical separation from family and relatives. Being far from familiar emotional and social support systems can intensify feelings of isolation. During the adjustment period, these students often struggle with homesickness and miss their accustomed environment. Although this sense of loneliness may diminish over time as adaptation improves, the process varies depending on individual differences such as attitude, temperament, and personality traits. For some students, adaptation may take longer, prolonging their experience of loneliness while living abroad. In contrast, students who live with their families during their education do not face the same adaptation challenges, as they remain within their familiar cultural and social context. They do not need to adjust to a new environment, language, or cultural norms. On the other hand, students who live independently but remain in their home country also report somewhat higher levels of loneliness compared to those living with their families, since they too must adjust to a new city or social setting. Nevertheless, the highest levels of loneliness are observed among students who study abroad, reflecting the cumulative impact of cultural, linguistic, and social adaptation difficulties.

**Gender Differences:** We also examined gender differences in loneliness and depression. Interestingly, our results indicated that male students reported significantly higher levels of both depression and loneliness compared to female students. While many previous studies have suggested that females generally exhibit higher levels of depression (Kessler et al., 1993; Bromet et al., 2011; Nolen-Hoeksema & Jackson, 2001), some research has found no significant gender differences in depression scores (Bayram & Bigel, 2008), and others have reported higher levels of depressive symptoms or loneliness among males (Demir, 1990). These mixed findings may reflect differences in sample characteristics, age groups, and



cultural contexts. In the present study, male students' higher loneliness may be partially explained by gender differences in social communication and relationship-building. Females tend to be more socially skilled and communicative, which facilitates stronger social bonds and protects against loneliness. Research shows that female friendships are often more emotionally supportive and intimate, whereas male friendships may involve larger, less emotionally focused social networks (Ellis et al., 2008; Geary, 2010). Additionally, meta-analytic evidence suggests that females show small but consistent advantages in verbal abilities and certain aspects of interpersonal communication, such as self-disclosure and emotional expressiveness, which may facilitate the maintenance of social relationships (Hyde & Linn, 1988; Leaper & Ayres, 2007).

Overall, although gender differences in depression and loneliness are not entirely consistent across studies, the current findings align with the idea that social and relational competencies can mediate experiences of loneliness and depressive symptoms, potentially explaining why male students in our sample reported higher levels of both (Mann et al., 2022; Chen et al., 2023; de Maio Nascimento et al., 2024).

**Integration with Literature and Theoretical Implications:** Our findings reinforce the theoretical understanding that social connectedness is fundamental to well-being. The need for relatedness is a core tenet of self-determination theory and other psychological frameworks. When this need is unmet (as in loneliness), psychological distress often follows. The significant inverse correlation between family involvement and loneliness found by Korkut & Gençtürk (2020) is essentially the flip side of our finding where strong belonging (family or otherwise) protects against loneliness and thereby against depression. In our study, those with family nearby generally fared better emotionally. This underscores the protective role of close relationships. For students who cannot have family physically present (which is common in higher education), fostering surrogate family-like support (through mentors, close friendships, or supportive community) may be crucial. Baumeister and Leary's (1995) concept of the "need to belong" is vividly illustrated in our results: students deprived of their usual belonging sources (familial or cultural) experience real psychological consequences, namely loneliness and associated depression.

It is also worth noting that not every student living abroad was lonely or depressed there was variability. This highlights that individual differences play a role. Some students adapt well, perhaps by actively seeking social ties (joining international student clubs, making local friends) or by maintaining virtual contact with loved ones back home. Others might have personality traits like openness that help them integrate into new cultures more easily. Conversely, a student living with family isn't immune to loneliness or depression; they might have other issues (conflict at home, personal mental health vulnerabilities) that cause loneliness even in a family setting. In fact, some research suggests that quality of relationships matters more than quantity or mere presence one can feel lonely in the midst of family if those relationships are conflictual or lack emotional intimacy. We did not measure family relationship quality, but future studies could explore that nuance (for example, a student living at home but in a disengaged family might have higher loneliness than a student living away but with very close friendships).

**Limitations:** There are several limitations to consider. First, the study is cross-sectional, so causality cannot be definitively established. While it is likely that loneliness influences depression (and our discussion has assumed this direction based on theory and some longitudinal evidence (Lee et al., 2021) it is also conceivable that some students became lonely because they were first depressed and withdrew. A longitudinal design following students over time (e.g., from the start of university through later years) would be valuable to see if changes in living situation lead to changes in loneliness and subsequently to changes in depression. Second, the measure of living situation was relatively broad. "Living abroad" in our study mostly comprised international students in Turkey, who themselves were a mix of various nationalities; we did not analyze differences among them (e.g., perhaps students from culturally similar countries vs. very different countries have different loneliness outcomes). Also, "living away in home country" could include varying arrangements (living alone vs. with roommates vs. dormitory) which we did not differentiate these variations could influence loneliness differently. Future research could refine this by examining the quality of the living environment (are roommates supportive friends or strangers? Does the student live alone?) and frequency of family contact as moderating factors.

Additionally, all data were self-reported. Common method bias might inflate associations (though the correlation we found was moderate, not extreme). Also, when students self-report depression, cultural differences in willingness to endorse symptoms could play a role for example, some international students might underreport psychological symptoms due to stigma, which could have attenuated the observed group differences in depression. Finally, while we focused on loneliness and living situation, other social variables could be important predictors of depression too. For example, perceived social support (distinct from loneliness), involvement in campus life, or relationship status (having a romantic partner or close friend) can also affect depression. Our study kept a focused scope, but we acknowledge that student depression is multi-determined.

It is important to note that the sample in this study was limited to students from only two universities. This restriction may limit the generalizability of the findings, as the experiences and social contexts of students at other institutions could differ. Consequently, caution should be exercised when extending these results to broader student populations.

**Practical Implications:** Despite these limitations, the findings have practical implications. They highlight the importance of addressing loneliness in university mental health programs. Universities should be aware that international students and those relocating for studies are at higher risk of social isolation. Proactive measures, such as mentorship programs where new international students are paired with senior students or local “buddy” families, can provide an immediate sense of connection. Counseling services should also routinely assess for loneliness and not just for clinical symptoms; a student might not come in saying “I’m depressed” but may admit “I feel very alone here,” which is a red flag for possible developing depression. Group therapy or support groups specifically for homesickness or adjustment issues could be beneficial these allow students to share experiences and build bonds, directly countering loneliness. Our results also suggest that simply increasing opportunities for social interaction on campus could help. Universities might organize cultural exchange events, social mixers, or encourage participation in clubs and organizations, especially targeting those who might otherwise be isolated (e.g., students in off-campus housing or those from abroad).

For students living at home, mental health staff should not automatically assume they are socially buffered; individual assessments are still necessary, as personal or family issues can cause loneliness even in a family environment. But generally, leveraging family support can be a protective factor. University counselors might involve family in interventions when appropriate (with the student’s consent), or educate families about the importance of support for their college-going children’s mental health.

In sum, this study provides evidence that enhancing social connectedness could be a key strategy in reducing depression among university students. It reinforces the view that mental health initiatives in educational settings should encompass social well-being, not solely academic or individual psychological factors.

## Conclusion and Recommendations

In conclusion, the present research demonstrates that social factors play a crucial role in university student mental health. Loneliness emerged as a significant predictor of depression, confirming that students who lack satisfying social connections are at elevated risk for depressive symptoms. Moreover, the living situation of students is linked with their psychological well-being: those studying abroad away from their home and family tend to feel lonelier than their peers, which can, in turn, compromise their mental health. While living abroad did not automatically translate into significantly higher depression in this sample, the heightened loneliness in that group signals a need for preventative support. Lastly, according to loneliness and depression there is gender differences. Male students have higher level of depression and loneliness. Our findings highlight that universities should not overlook the social context of students when addressing mental health issues. By intervening to reduce loneliness and by supporting students in challenging living situations, it may be possible to improve student well-being and academic success.

Based on the findings of this study, we offer the following recommendations:

- **Enhance Orientation and Social Integration:** Universities should implement specialized orientation programs for new students, especially those from out-of-town or overseas. These programs can include networking events, cultural orientation, and introductions to student organizations, helping students form social connections early and combat loneliness.
- **Peer Mentoring and Buddy Systems:** Establish peer mentoring schemes where senior students mentor first-year and international students. Having a peer “buddy” can provide guidance and companionship. For international students, pairing them with a local student (possibly with similar interests or academic major) can ease cultural adjustment and create an immediate personal connection.
- **Counseling and Support Groups:** Campus counseling centers should consider offering group sessions or workshops focused on loneliness, adjustment, and coping skills. Group therapy or support groups allow students to share experiences (e.g., discussing homesickness or cultural challenges) and realize they are not alone in their feelings, which itself can alleviate loneliness. Counselors should also proactively screen for social isolation in students who seek help for stress or academic issues, as loneliness might be an underlying factor.
- **Family Involvement Initiatives:** For students who have family nearby, universities could organize family-inclusive events (such as family weekends or webinars for parents) to encourage supportive family involvement in students’ lives. For those far from family, providing resources to maintain contact (good internet facilities for video calls, time off during important family holidays) can help students stay connected with loved ones and reduce feelings of loneliness.
- **Social Spaces and Activities:** Universities should create and promote informal social spaces and activities. Comfortable common areas, recreation centers, and student lounges can serve as hubs for interaction. Regular social activities (clubs, sports, cultural festivals, game nights) should be scheduled, with attention to including students who might be less likely to join on their own. Resident assistants in dorms can be trained to identify students who seem isolated and to engage them in floor or dormitory events.
- **Targeted Support for International Students:** Given the unique challenges international students face, universities might establish an international student office that provides ongoing support beyond orientation. This can include programs like language conversation partners, cross-cultural counseling services, and facilitating connections with community groups from the student’s home country (if available) for a sense of cultural belonging. Mentorship from faculty or staff who have international experience can also be beneficial.
- **Further Research and Monitoring:** Institutions should continuously monitor student well-being through surveys or feedback, paying special attention to loneliness indicators. Future research could build on this study by using longitudinal designs or testing interventions (e.g., does a peer mentorship program measurably reduce loneliness and depression over a semester?). Additionally, qualitative research could provide deeper insight into the personal experiences of loneliness among students in different living situations, informing more tailored interventions.

By implementing these recommendations, educational institutions can foster a more supportive social environment that helps students thrive both emotionally and academically. Ultimately, addressing social predictors such as loneliness and living context is a vital component of promoting mental health in university student populations. When students feel connected and supported, they are not only less likely to become depressed, but also more likely to engage fully in campus life and achieve their academic goals. This holistic approach to student well-being recognizing the interplay of social life and mental health stands to benefit individuals, campus communities, and society at large as these students transition into their future roles.

### Ethics Committee Statement

This study is derived from a master's thesis titled “The Personality and Social Variables as Predictors of Depression,” completed at the International University of Sarajevo, Faculty of Arts and Social Sciences, Department of Psychology in 2018. As the study was conducted prior to 2018, formal ethics committee approval was not required. Nevertheless, all procedures adhered to scientific research and publication

ethics. Each university granted permission to conduct the study, and all participants took part on a voluntary basis.

### Conflict of Interest Statement

There is no conflict of interest by the author. The literature section of the study has been updated and the sources have been reorganised to reflect the existing academic knowledge. However, the field data and findings of the study are based on data collected in 2018. Therefore, the results of the study reflect the conditions of the period in which the data were collected.

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