

## Predicting Psychological Adaptation from Intercultural Sensitivity and Intergroup Contact through Intergroup Anxiety

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**Abstract<sup>2</sup>:** Adapting to the social, cultural, and educational environment of a host society can be inherently taxing and stressful for student sojourners. Consequently, they are particularly vulnerable to a wide range of mental health complications, including depression, anxiety, psychological distress, low satisfaction, and low happiness. However, students with sufficient personal resources are believed to cope more effectively with these challenges. Considering the potential roles of these resources, the present study sought to examine the mediated effects of positive intergroup contact and intercultural sensitivity on psychological adaptation indices (i.e., depression-happiness continuum and life satisfaction) through intergroup anxiety. A total of 447 student sojourners were conveniently selected for the study, and they completed self-report questionnaires measuring intergroup contact, intercultural sensitivity, intergroup anxiety, depression-happiness, and life satisfaction. Pearson's product-moment correlation, hierarchical multiple regression, and mediation analyses were conducted using SPSS v.26 and the jAMM module (medmod) jamovi software. The regression results indicated that positive intergroup contact and intercultural sensitivity significantly predicted both depression-happiness and life satisfaction. Mediation analyses further revealed that intergroup anxiety significantly mediated the relationships of both intergroup contact and intercultural sensitivity with the psychological indices of depression-happiness and life satisfaction. The results underline that positive intergroup contact and intercultural sensitivity can function as meaningful but modest psychosocial resources in facilitating psychological adaptation of student sojourners. Therefore, university communities should incorporate these aspects into their initiatives to address students' mental health challenges.

**Keywords:** Psychological adaptation, intergroup contact, intercultural sensitivity, intergroup anxiety, student sojourners

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The internationalization of higher education has emerged as a defining characteristic of the 21st century, with the pursuit of knowledge and education no longer confined by national or regional boundaries. Consequently, the cross-border and cross-continental mobility of students, particularly those in higher education, has become a common phenomenon (Xiaoying et al., 2023). In 2020, the global population of student sojourners reached 6.3 million (Gutema et al., 2024). The sojourn of the students is predominantly from developing countries in the global south to the developed countries in the global north, mainly English-speaking countries (Gérard & Lebeau, 2023; Roshid & Ibna Seraj, 2023). While student sojourners can enjoy the benefits of studying abroad, they also encounter numerous adjustment challenges that may increase their risk of mental health issues, including depression, dissatisfaction with life, anxiety, loneliness, psychological distress, fear, homesickness, and even suicidal thoughts (Alasmari, 2023; Dickerson & Nelson, 2024; Gebregergis & Csukonyi, 2025; Handrianto et al., 2025; Low et al., 2023). Considering these challenges, researchers have extensively investigated the factors that contribute to successful intercultural adaptation, such as coping styles (Pakzad et al., 2024), multicultural personality (Yakunina et al., 2012), psychological capital (Prasath et al., 2022; Yasmeen et al., 2023), emotional intelligence (Zabin et al., 2022), host national connectedness (Bethel et al., 2020), cultural intelligence (Malay et al., 2023), academic self-efficacy, and social support (Lee & Ciftci, 2014; Lu et al., 2024), cultural empathy and intercultural communication competence (Artanti, 2025; Zhang & Noels, 2024).

In addition to the aforementioned factors, intergroup contact and intercultural sensitivity are thought to enhance psychological adaptation among student sojourners by alleviating intergroup anxiety. However, the existing literature on the roles of intergroup contact and intercultural sensitivity in intercultural adaptation of student sojourners through intergroup anxiety is significantly limited (Cao & Meng, 2022; Gebregergis & Csukonyi, 2025; Wilson et al., 2013). This indicates that the core assumptions of intergroup contact theory, intergroup anxiety, and intercultural sensitivity frameworks are not yet empirically well substantiated within the international student population. Therefore, this limitation highlights the need for the current study, which aims to contribute to the empirical validation and theoretical integration of these frameworks within the context of student sojourners' adaptation. Furthermore, prior studies have predominantly focused on sociocultural adaptation, highlighting the limited research on psychological adaptation outcomes (Hirai et al., 2015; Soheili & Lanz, 2025). Moreover, existing studies on psychological adaptation have largely concentrated on pathological outcomes (Soheili & Lanz, 2025). Likewise, it remains unclear whether intergroup anxiety mediates the effects of intergroup contact and intercultural sensitivity on psychological adaptation. Further, despite the rapidly growing number of student sojourners in Hungary (Alpek et al., 2022; Wu & Rudnák, 2021), there are still insufficient studies exploring their psychological adaptation in the country. The available few Hungarian studies mainly concentrated on sociocultural adaptation of specific groups of student sojourners, such as those from Turkey (Erturk & Nguyen Luu, 2022) and post-Soviet states (Erturk & Nguyen Luu, 2022; Yerken et al., 2022).

Given the rising psychological adjustment challenges and the scarcity of research in this area, the present study aimed to determine whether positive intergroup contact and intercultural sensitivity can predict psychological adaptation of student sojourners in Hungary through the mediating effect of intergroup anxiety. Therefore, the main focus of the current study is to empirically examine the contributions of intergroup contact and intercultural sensitivity in promoting psychological adaptation by reducing feelings of fear, apprehension, and uncertainty experienced during intercultural interactions with members of the host society. By clarifying the dynamics among these variables, the study is expected to provide valuable insights into how intergroup contact and intercultural sensitivity directly and indirectly enhance the psychological adaptation of student sojourners through the reduction of intergroup anxiety. Moreover, the findings may offer practical implications for host universities, policymakers, administrators,

and mental health professionals seeking to better support the psychological well-being and adaptation of international students.

## **Literature review and hypothesis development**

### **Intergroup contact and psychological adaptation**

Despite the lack of a clear definition of adaptation in the existing literature, many researchers use the terms adaptation and adjustment interchangeably. However, several scholars have emphasized that adjustment refers to the process of making cognitive, affective, and behavioral changes to fit into a new environment, whereas adaptation represents the measurable outcome of this process (Pitts, 2005; Schartner & Young, 2020). Therefore, psychological adaptation refers to the affective or emotive outcomes of the acculturation or adjustment process, such as psychological well-being, happiness, satisfaction, and depression (Sam & Berry, 2010). Psychological adaptation is grounded in the stress and coping paradigm, which emphasizes the importance of individuals' interpretations of their experiences and the coping strategies they employ (Ward et al., 2005). Although there are numerous indicators of psychological adaptation, the present study specifically employed depression, happiness, and life satisfaction as indices of psychological adaptation. Many variables contribute to the success and effectiveness of student sojourners' psychological adaptation, among which intergroup contact is recognized as a critical factor that promotes positive psychological acculturation outcomes. The contact hypothesis suggests that when members of different groups with equal status work together toward a shared goal, they are more likely to form close relationships, which are essential for reducing prejudice (Allport, 1954; Pettigrew & Tropp, 2006). Research on positive intergroup experiences indicates that such contact reduces intergroup anxiety and promotes more favorable intergroup attitudes (Meleady et al., 2021; Stephan & Stephan, 1985; Telaku, 2021). Recently, Ye et al. (2023) found that intergroup contact positively predicted college students' subjective well-being. Research involving student sojourners similarly shows that building intercultural relationships with local communities is crucial for psychological well-being and academic success (e.g., Brown, 2007; Mori & Takeuchi., 2016; Tran & Vu, 2017). Recent findings reinforce the idea that intercultural relationships are key to student sojourners' successful adaptation. For example, Bethel et al. (2020) found that student sojourners' contact with host-country members helped reduce transition stress and improve psychological adaptation by easing cultural adjustment. Similarly, Sheng et al. (2022) reported that friendships with host nationals were positively associated with both psychological and sociocultural adaptation. Based on the existing literature, the following hypothesis was proposed to guide the study.

**H1. Student sojourners with high intergroup contact will achieve better psychological adaptation.**

### **Intercultural sensitivity and psychological adaptation**

In addition to positive intergroup contact, intercultural sensitivity is recognized as a key factor in fostering the psychological adaptation of international students. Intercultural sensitivity, as defined by Chen and Starosta (1997), refers to "an individual's ability to develop positive emotions towards understanding and appreciating differences, promoting appropriate and effective behavior in intercultural communication" (p. 5). The definition suggests that intercultural sensitivity emphasizes an individual's ability to appreciate and respect cultural differences within a multicultural setting. Research suggests that intercultural sensitivity plays a crucial role in facilitating various aspects of intercultural adaptation. This indicates that

intercultural sensitivity is a crucial factor for successful intercultural transition, leading to positive psychological adaptation outcomes such as mental well-being and satisfaction. Therefore, it can be argued that intercultural sensitivity serves as a precursor to adaptation (He et al., 2023). For instance, Rodríguez-Izquierdo (2022) found a positive correlation between intercultural sensitivity, mobility experiences, and intercultural friendships of university students. Lulan et al. (2020) also reported that intercultural sensitivity accounted for 22.72% of the variance in the life satisfaction of student sojourners. Psychological adaptation primarily encompasses the emotional outcomes of intercultural adaptation, including satisfaction, depression, happiness, and psychological well-being, which are influenced by personal attributes such as personality, coping strategies, and intercultural sensitivity (Sam & Berry, 2010; Wilson et al., 2013). As an affective component of intercultural communication competence, traits like self-esteem, cultural empathy, and open-mindedness serve as personal mindsets that enable individuals to recognize cultural differences and demonstrate a willingness to accept and appreciate diversity during intercultural interactions (Chen & Starosta, 2000). Building on the literature, the following guiding hypothesis was formulated.

**H2.** *Student sojourners with high intercultural sensitivity will achieve better psychological adaptation.*

### **The Mediating effect of intergroup anxiety**

Previous studies indicate that the relationship between intergroup contact and psychological adaptation is not always straightforward. Intergroup anxiety, defined as “a type of anxiety that people experience when anticipating or engaging in intergroup interactions” (Stephan, 2014, p. 2), may mediate the relationship between intergroup contact and intercultural adaptation of student sojourners. Intergroup anxiety functions as a significant barrier to successful intercultural transition, specifically by inhibiting international students’ social engagement with people of different cultures and consequently impeding positive intercultural adaptation outcomes within multicultural contexts (Gebregergis & Csukonyi, 2025). The intergroup anxiety theory of Stephan (2014) suggests that intergroup anxiety can mediate the impact of personal experiences (e.g., contact) on affective (e.g., fear, anger), behavioral (e.g., avoiding group contact), and cognitive outcomes (e.g., intergroup attitudes, stereotypes). Empirical research supports this framework, showing that intergroup anxiety mediates the effects of contact on these variables. For instance, Mak et al. (2014) found that intergroup anxiety and intercultural communication mediated the relationship between contact quality and intergroup attitudes among Australian domestic students toward international students. Similarly, Shim et al. (2012) demonstrated that intergroup anxiety mediated the relationship between contact and Koreans’ affective and behavioral attitudes toward Americans. Moreover, intergroup anxiety mediated the relationship between interpersonal mindfulness and intercultural communication effectiveness among student sojourners in Russia (Khukhlaev et al., 2022). The Anxiety/Uncertainty Management Theory (AUM) also argues that managing anxiety and uncertainty is essential for effective communication in interpersonal and intergroup interactions (Gudykunst, 1995).

Although research specifically on the mediating effect of intergroup anxiety between intercultural sensitivity and psychological adaptation among student sojourners is limited, some general studies have demonstrated its mediating role. For example, intergroup anxiety acted as a mediator between intercultural sensitivity and positive attitudes, suggesting that Turkish locals who exhibited greater intercultural sensitivity experienced lower levels of intergroup anxiety, leading to more favorable attitudes toward Syrians (Sari & Yalçınkaya-Alkar, 2022). Furthermore, several researchers have noted that negative expectations about intergroup interactions are positively correlated with intergroup anxiety (Britt et al., 1996; Brown, 2007; Butz & Plant, 2007). These findings indicate that intergroup anxiety intensifies when

individuals expect negative consequences during intergroup interactions. Individuals with high levels of intercultural sensitivity tend to possess greater self-esteem, enabling them to evaluate intercultural interactions positively rather than anticipating negative experiences (Chen & Starosta, 1997). Chen and Starosta (1997) also suggest that non-judgmental attitudes during intercultural interactions lead to a more enjoyable experience with individuals from different cultures. Guided by prior studies and theories of intergroup anxiety and intercultural sensitivity, the following hypotheses were proposed.

**H3.** *Intergroup anxiety will partially mediate the relationship between intercultural sensitivity and psychological adaptation, with the direct effect expected to remain significant.*

**H4.** *Intergroup anxiety will partially mediate the relationship between intergroup contact and psychological adaptation, with the direct effect expected to remain significant.*

## Methods

### Sample

The study employed a cross-sectional research design, which allows for the simultaneous examination of associations among psychological attributes within a large sample (Wang & Cheng, 2020). The study's sample included 447 student sojourners in Hungary. Participants were selected using a convenience sampling strategy. The convenience sampling method is one of the most commonly used sampling techniques in social and behavioral science quantitative research, as it allows researchers to recruit participants according to their convenience and accessibility (Gebregergis & Csukonyi, 2025; Memon et al., 2025). To determine the optimal sample size, the statistical formula of Yamane (1973) was employed, calculating the minimum required sample size ( $n$ ) as  $n = N/I + Ne^2$ , where  $N$  represents the total number of student sojourners at the sampled university,  $n$  is the required sample size, and  $e$  denotes the margin of error, set at 5%. During the data collection period in April 2024, the total population of student sojourners at the university was 7,300, resulting in a calculated adequate sample size of 379. Yamane's formula is a commonly applied statistical method for calculating the optimal sample size required for a study (e.g., Arpacı, 2023; Kapiriri et al., 2025; Saramunee et al., 2025). However, it is important to note that Yamane's formula is a simple proportion-based method and does not account for effect size, power, or the number of predictors. The sample included 215 males and 232 females, with a mean age of 23.17 years. The average length of stay in the host country was 24 months. The participants represented various educational levels: 248 were undergraduates (50.70%), 154 were master's students (34.50%), and 44 were doctoral candidates (9.80%). Regarding financial support, 224 participants (50.90%) were scholarship holders, while 223 (49.10%) were self-funded. In terms of continental distribution, the majority of students were from Asia ( $n = 231$ ; 52.40%) and Africa ( $n = 180$ ; 40.80%), with a smaller number from Europe ( $n = 19$ ; 4.30%), North America ( $n = 3$ ; 0.70%), and South America ( $n = 7$ ; 1.60%).

### Measures

**Psychological adaptation:** Depression, happiness, and life satisfaction were used as measures of psychological adaptation.

**Depression-happiness:** The Depression-Happiness Scale (DHS), developed by Joseph and Lewis (1998), was employed to measure depression and happiness. The DHS is a 25-item bipolar self-report scale designed to assess both depression and happiness simultaneously. Twelve items inquire about positive thoughts, feelings, and bodily experiences, while thirteen items focus on negative thoughts, feelings, and bodily experiences. Participants are asked to

reflect on how they have felt over the past seven days and to rate the frequency of each item on a four-point scale ranging from 0 (*never*), 1 (*rarely*) to 3 (*often*). The 13 negative items are reverse-coded, allowing participants' total scores to range from 0 to 75 (Joseph & Lewis, 1998). Higher scores indicate greater happiness, while lower scores indicate higher depression. The psychometric properties of the scales were established in previous research (Joseph & Lewis, 1998). In the current study, the reliability coefficient of the scale was .83.

**Life satisfaction:** The Satisfaction With Life Scale (SWLS), developed by Diener et al. (1985), was used to measure student sojourners' overall satisfaction with life. The SWLS is a short, 5-item self-report Likert scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). The total score ranges from 5 to 35, with higher scores indicating a greater level of satisfaction. Previous studies have affirmed that the scale is both valid and reliable (Pavot & Diener, 2008). In the present study, the scale demonstrated strong internal consistency ( $\alpha = .81$ ).

### ***Intergroup contact***

The General Intergroup Contact Quantity and Contact Quality Scale, developed by Islam and Hewstone (1993), was utilized to assess intergroup contact. This scale measures both the quantity of intergroup contact (5 items) and the quality of intergroup contact (5 items). The scale consists of a 10-item self-report questionnaire utilizing a Likert-type format. Higher scores on the quantity items indicate greater interaction with members of the host country, while higher scores on the quality items signify a more positive contact experience. Previous studies have reported that the overall scale demonstrates good internal consistency and reliability (Page-Gould et al., 2010; Ye et al., 2023). Following these studies, the present study also computed a total score for the 10 items. The overall scale demonstrated strong reliability, with a coefficient of 0.87, well above the commonly accepted threshold of 0.70 (Hussey et al., 2025).

### ***Intercultural sensitivity***

The Intercultural Sensitivity Scale, originally authored by Chen and Starosta (2000) and later abbreviated by Wang and Zhou (2016), was adopted to measure the intercultural sensitivity of international students. The scale consists of 15 items and uses a Likert-type format, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). An overall score can be computed by totaling all the item values, with higher scores indicating a greater level of intercultural sensitivity. Several studies have validated that this measure demonstrates high internal consistency and good validity (Chen & Starosta, 2000; Lulan et al., 2020). The scale also showed a higher internal consistency in the present study ( $\alpha = .83$ ).

### ***Intergroup anxiety***

Intergroup anxiety was measured using the Intergroup Anxiety Scale developed by Stephan and Stephan (1985). The scale consists of 10 items that assess the following adjectives: certain (reverse-coded), awkward, accepted (reverse-coded), confident (reverse-coded), happy (reverse-coded), defensive, irritated, impatient, suspicious, and careful. Based on the adjectives, the participants were asked to rate their feelings when interacting with Hungarians. The items are rated on a 10-point scale ranging from 1 (*not at all*) to 10 (*extremely*). The scale was found to have good internal consistency (Gudykunst & Nishida, 2001; Khukhlaev et al., 2022). The Cronbach alpha value of the scale in the current study was .77.

## **Procedure, ethical consideration, and data analysis**

First, the study received approval from the United Ethical Review Committee for Research in Psychology (reference number 2024-008). A printed self-report questionnaire was then distributed to the participants in their respective classrooms, dormitories, and libraries. The questionnaire was conducted in English because the participants had adequate proficiency in the language. Following American Psychological Association guidelines, participation in this study was voluntary and based on informed consent. For data analysis, Descriptive statistics, including the mean, standard deviation, minimum, and maximum values, were computed to summarize the data. Skewness and kurtosis were examined to assess the normality of the data distribution, and Cronbach's alpha was calculated to evaluate the internal consistency of the scales. Pearson product-moment correlations were performed to explore the bivariate relationships between the study variables. To explore how well intergroup contact, intercultural sensitivity, and intergroup anxiety predict both depression-happiness and life satisfaction, hierarchical multiple regression analyses were performed. In performing the analyses, a separate four-block regression model was developed for each outcome variable: depression-happiness and life satisfaction. The demographic variables were placed in the first block. Intergroup contact was added in the second block, followed by intercultural sensitivity in the third block and intergroup anxiety in the fourth block of the model. Finally, the jAMM Module (medmod) of Jamovi software was utilized to assess the mediating role of intergroup anxiety on the effects of intercultural sensitivity and intergroup contact on psychological adaptation. In conducting the mediation analyses, intergroup contact and intercultural sensitivity were set as predictor variables, intergroup anxiety functioned as the mediator, and depression-happiness and life satisfaction were examined as the outcome variables. The basic assumptions for regression analyses, including normality, multicollinearity, homoscedasticity, and outliers, were assessed, revealing no violations in the datasets.

## **Results**

### **Descriptive statistics of the study**

Table 1 presents a summary of descriptive statistics, such as minimum, maximum, mean, standard deviation, Cronbach's alpha, and measures of distribution shape (i.e., skewness and kurtosis). The Cronbach's alpha values for all study variables indicate strong internal consistency. Furthermore, the skewness and kurtosis values fell within the acceptable range of +2 to -2 (Gravetter & Wallnau, 2014), suggesting that the data sets were normally distributed.

**Table 1.***Summary of Descriptive Statistics of the Study Variables*

Variables	Min	Max	M	SD	Item m	Alpha	Sk	Ku
Depression-Happiness	13.0 0	69.0 0	46.9 5	10.5 6	25	.83	-.38	-.16
Life Satisfaction	5.00 0	35.0 5	22.1	6.38	5	.81	-.21	-.23
Intercultural Sensitivity	35.0 0	78.0 0	60.0 4	8.57 11.7	15 10	.83 .87	-.56 .65	-.43 .26
Intergroup Contact	10.0 0	70.0 0	28.7 2	2				
Intergroup Anxiety	10.0 0	50.0 0	25.2 6	6.32	10	.77	.08	.22

Note. Sk = Skewness; Ku = Kurtosis

### Relationship between the study variables

Table 2 depicts the relationships between the study variables. Specifically, intergroup contact was significantly associated with depression-happiness ( $r = .16, p < .001$ ), life satisfaction ( $r = .22, p < .001$ ), intercultural sensitivity ( $r = .17, p < .001$ ), and intergroup anxiety ( $r = -.36, p < .001$ ). Additionally, intercultural sensitivity was significantly related to depression-happiness ( $r = .28, p < .001$ ), life satisfaction ( $r = .18, p < .001$ ), and intergroup anxiety ( $r = -.44, p < .001$ ). Intergroup anxiety also showed significant correlations with depression-happiness ( $r = -.29, p < .001$ ) and life satisfaction ( $r = -.23, p < .001$ ). Furthermore, the relationship between depression-happiness and life satisfaction was statistically significant ( $r = .58, p < .001$ ).

**Table 2***Bivariate Relationships Between the Study Variables*

Variables	1	2	3	4
1. Depression-Happiness				
2. Life Satisfaction	.58**			
3. Intergroup Contact	.16**	.22**		
4. Intercultural Sensitivity	.28**	.18**	.17*	
5. Intergroup Anxiety	-.29**	-.23**	-.36**	-.44**

\*\* $p < 0.01$ ; \* $p < 0.05$

### Predictors of psychological adaptation (depression-happiness and life satisfaction)

Table 3 presents the regression coefficients for the predictors of depression-happiness and life satisfaction. Cohen's  $f^2$  was calculated to assess the effect size of each predictor in independently explaining variance in psychological adaptation. Following Cohen (1988), effect sizes were interpreted as small ( $f^2 = 0.02$ ), medium ( $f^2 = 0.15$ ), and large ( $f^2 = 0.35$ ). The first block of variables collectively explained 8% of the variance in depression-happiness ( $R^2 = .06, F_{(5, 441)} = 7.43, p < .001$ ) and 3% of the variance in life satisfaction ( $R^2 = .03, F_{(5, 441)} = 2.39, p < .05$ ). Among the demographic variables, males reported a high level of happiness ( $\beta = .19, p < .001$ ), and older students experienced a high level of happiness ( $\beta = .13, p < .05$ ) and life satisfaction  $\beta = -.14, p < .05$ . The addition of intergroup contact in the second block slightly improved the models, explaining a total of 9% of the variance in depression-happiness ( $R^2 = .09, F_{(10, 441)} = 3.81, p < .001$ ).

.09,  $F_{(6, 440)} = 7.09, p < .001$ ), and 6% in life satisfaction ( $R^2 = .06, F_{(6, 440)} = 5.04, p < .001$ ). After controlling for the effects of the demographic variables, intergroup contact contributed an additional one percent of variance in depression-happiness ( $R^2$  change = .01,  $F_{(1, 440)} = 5.05, p < .05$ ) and 4% in life satisfaction ( $R^2$  change = .04,  $F_{(1, 440)} = 17.83, p < .001$ ). Intergroup contact positively and significantly predicted depression-happiness ( $\beta = .11, p < .05$ ) and life satisfaction ( $\beta = .20, p < .001$ ). Cohen's  $f^2$  for the unique individual effect of intergroup contact on depression-happiness and life satisfaction was 0.011 (small) and 0.042 (moderate), respectively. When intercultural sensitivity was included in the third block, the regression model accounted for a 16% change in depression-happiness ( $R^2 = .16, F_{(7, 439)} = 11.80, p < .001$ ) and a 7% variance in life satisfaction ( $R^2 = .09, F_{(7, 439)} = 5.85, p < .001$ ). After excluding the effects of demographics and intergroup contact, intercultural sensitivity explained an additional 7% of the variance in depression-happiness ( $R^2$  change = .07,  $F_{(1, 439)} = 36.64, p = .001$ ), and 2% of the change in life satisfaction ( $R^2$  change = .02,  $F_{(1, 439)} = 10.05, p < .001$ ). Intercultural sensitivity was positively and significantly related to depression-happiness ( $\beta = .27, p < .001$ ) and life satisfaction ( $\beta = .15, p < .001$ ). The calculated effect size of the independent contribution of intercultural sensitivity was moderate for depression-happiness ( $f^2 = 0.083$  and small for life satisfaction ( $f^2 = 0.020$ )). The inclusion of intergroup anxiety in the final block enhanced the model's ability to account for a 17% change in depression-happiness ( $R^2 = .17, F_{(7, 439)} = 11.47, p < .001$ ) and a 10% variance in life satisfaction ( $R^2 = .10, F_{(7, 438)} = 5.75, p < .001$ ). After removing the effects for controlling variables, intergroup anxiety explained a small amount of change in depression-happiness ( $R^2$  change = .02,  $F_{(1, 439)} = 7.81, p = .001$ ) and life satisfaction ( $R^2$  change = .01,  $F_{(1, 438)} = 4.72, p < .05$ ). Similarly, the effect sizes of intergroup anxiety were small, with  $f^2 = 0.024$  for depression-happiness and  $f^2 = 0.011$  for life satisfaction. Intergroup anxiety negatively and significantly predicted depression-happiness ( $\beta = -.15, p < .01$ ) and life satisfaction ( $\beta = -.12, p < .05$ ).

**Table 3***Regression Coefficients for Predictors of Psychological Adaptation*

Predictors	Depression-Happiness					Life satisfaction				
	$\beta$	R	$R^2$	$\Delta R^2$	F	$\beta$	R	$R^2$	$\Delta R^2$	F
<i>Model 1</i>		.28	.08		7.43***		.16	.03		2.39*
Gender	.19***					-.03				
Age	.13*					.14*				
Educational level	-.04					.01				
Length of stay	.03					.06				
Source of Fund	.09					.03				
<i>Model 2</i>		.30	.09	.01	7.09***		.25	.06	.04	5.04***
Gender	.16					-.05				
Age	.13					.13*				
Educational level	-.03					.01				
Length of stay	.02					.03				
Source of Fund	.08					.02				
Intergroup contact	.11*					.20***				
<i>Model 3</i>		.40	.16	.07	11.80***		.29	.09	.02	5.85***
Gender	.19					-.03				
Age	.12					.12*				
Educational level	-.03					.02				
Length of stay	.03					.03				
Source of funds	.05					-.00				
Intergroup contact	.07					.18***				
Intercultural sensitivity	.27***					.15***				
<i>Model 4</i>		.42	.17	.02	11.47***		.31	.10	.01	5.75
Gender	.19					-.03				
Age	.10					.11				
Educational level	-.04					.01				
Length of stay	.05					.05				
Source of Fund	.04					-.01				
Intergroup contact	.03					.15***				
Intercultural sensitivity	.22***					.10*				
Intergroup anxiety	-.15***					-.12*				

*Note.* Dummy variables were coded as: *Sex*: Male = 1, Females = 0; *Educational Level*: Undergraduate = 1, Postgraduate = 0; *Source of financial support*: Scholarship holder = 1, Self-support = 0. \* $p < .05$ , \*\*\* $p < .001$

### The mediated effects of intergroup contact on depression-happiness and life satisfaction through intergroup anxiety

All regression paths between the predictor, mediator, and outcome variables were statistically significant (see Table 4 and Table 5). A bias-corrected method with 1,000 samples was used to evaluate the statistical significance of the indirect effects of intergroup contact on depression-happiness and life satisfaction through intergroup anxiety, and the effects were significant as the 95% confidence interval did not include zero ( $b = 0.09$ , 95% CI [0.05, 0.13];  $b = 0.04$ , 95% CI [0.01, 0.06], respectively). This indicated that intergroup anxiety significantly

mediated the association between intergroup contact and both indices of psychological adaptation (i.e., depression–happiness and life satisfaction).

**Table 4**

*Direct, Indirect, and Total Effects of Intergroup Contact on Depression-Happiness*

Type of effect	Path	B	SE	95% CI		$\beta$	Z	p
				Lower	Upper			
Indirect	IGC $\Rightarrow$ IGA $\Rightarrow$ DH	0.09	0.02	0.05	0.13	0.10	4.20	< .001
Component	IGC $\Rightarrow$ IGA	-0.19	0.03	-0.24	-0.14	-0.36	-7.42	< .001
	IGA $\Rightarrow$ DH	-0.44	0.09	-0.61	-0.28	-0.26	-5.18	< .001
Direct	IGC $\Rightarrow$ DH	0.06	0.04	-0.03	0.14	0.06	1.26	0.208
Total	IGC $\Rightarrow$ DH	0.14	0.04	0.06	0.22	0.16	3.29	0.001

*Note.* IGC = Intergroup Contact; IGA = Intergroup Anxiety; DH = Depression-Happiness

**Table 5**

*Direct, Indirect, and Total Effects of Intergroup Contact on Life Satisfaction*

Type of effect	Path	B	SE	95% CI		$\beta$	Z	p
				Lower	Upper			
Indirect	IGC $\Rightarrow$ IGA $\Rightarrow$ LS	0.04	0.01	0.01	0.06	0.06	3.07	0.002
Component	IGC $\Rightarrow$ IGA	-0.19	0.03	-0.25	-0.14	-0.36	-7.21	< .001
	IGA $\Rightarrow$ LS	-0.18	0.05	-0.27	-0.08	-0.18	-3.72	< .001
Direct	IGC $\Rightarrow$ LS	0.08	0.03	0.03	0.14	0.15	2.93	0.003
Total	IGC $\Rightarrow$ LS	0.12	0.03	0.06	0.17	0.21	4.47	< .001

*Note.* IGC = Intergroup Contact; IGA = Intergroup Anxiety; LS = Life Satisfaction

### The mediated effects of intercultural sensitivity on depression-happiness and life satisfaction through intergroup anxiety

As presented in Tables 6 and 7, the direct paths between the predictor, mediator, and outcome were all statistically significant. To assess the significance of the indirect effects, a bias-corrected bootstrapping approach with 1,000 samples was used. The results showed significant indirect effects of intercultural sensitivity on depression-happiness and life satisfaction, as the 95% confidence interval did not include zero ( $b = 0.11$ , 95% CI [0.06, 0.18];  $b = 0.06$ , 95% CI [0.03, 0.10]). Therefore, the findings demonstrated that intergroup anxiety served as a significant mediator in the relationships between intercultural sensitivity and the two indices of psychological adaptation: depression–happiness and life satisfaction.

**Table 6**

*Direct, Indirect, and Total Effects of Intercultural Sensitivity on Depression-Happiness*

Type of effect	Path	B	SE	95% CI		$\beta$	Z	p
				Lower	Upper			
Indirect	ICS $\Rightarrow$ IGA $\Rightarrow$ DH	0.11	0.03	0.06	0.18	0.09	3.63	< .001
Component	ICS $\Rightarrow$ IGA	-0.32	0.03	-0.39	-0.26	-0.44	-10.22	< .001
	IGA $\Rightarrow$ DH	-0.34	0.08	-0.50	-0.17	-0.21	-4.23	< .001
Direct	ICS $\Rightarrow$ DH	0.23	0.06	0.10	0.34	0.19	3.59	< .001
Total	ICS $\Rightarrow$ DH	0.34	0.06	0.22	0.46	0.28	5.53	< .001

*Note.* ICS = Intercultural Sensitivity; IGA = Intergroup Anxiety; DH = Depression-Happiness

**Table 7***Direct, Indirect, and Total Effects of Intercultural Sensitivity on Life Satisfaction*

Type of effect	Path	B	SE	95% CI		$\beta$	Z	p
				Lower	Upper			
Indirect	ICS $\Rightarrow$ IGA $\Rightarrow$ LS	0.06	0.02	0.03	0.10	0.08	3.56	<.001
Component	ICS $\Rightarrow$ IGA	-0.32	0.03	-0.39	-0.26	-0.44	-10.35	<.001
	IGA $\Rightarrow$ LS	-0.19	0.05	-0.29	-0.10	-0.19	-4.02	<.001
Direct	ICS $\Rightarrow$ LS	0.07	0.04	-0.01	0.15	0.10	1.76	0.079
Total	ICS $\Rightarrow$ LS	0.13	0.04	0.06	0.21	0.18	3.47	<.001

Note. ICS = Intercultural Sensitivity; IGA = Intergroup Anxiety; LS = Life Satisfaction

## Discussion

The purpose of this study was to explore the extent to which intercultural sensitivity and intergroup contact predict the psychological adaptation of student sojourners in Hungary. Further, our study investigated the mediating role of intergroup anxiety in the relationships between intercultural sensitivity and psychological adaptation. Guided by the study's hypotheses, the discussion section interprets four key findings in relation to previous research and the theoretical frameworks underpinning the study variables.

### Intergroup contact and psychological adaptation

Based on intergroup contact theory, we first hypothesized that positive intergroup contact would positively predict depression, happiness, and life satisfaction among student sojourners. The data from our study supported this hypothesis, demonstrating that student sojourners who engage in more frequent and higher-quality contact with locals exhibit fewer negative psychological outcomes, such as depressive symptoms, and more positive outcomes, such as increased happiness and life satisfaction. Although intergroup contact was significantly related to psychological adaptation, the effect size for its unique contribution was small to moderate, indicating that it accounts for only a modest portion of the variance in adaptation outcomes. The modest effect size may be due to the joint influence of various personal and contextual factors that collectively affect adaptation. The significant relationship between contact and adaptation is consistent with previous research, which highlights the beneficial role of intergroup contact in the psychological adaptation of both international and domestic students (e.g., Bethel et al., 2020; Feng & Zhang, 2024; Gebregergis & Csukonyi, 2025; Sheng et al., 2022; Ye et al., 2023). Positive contact with host nationals allows student sojourners to experience the host culture firsthand, learn social norms, build meaningful social connections, and receive social support, all of which are crucial for successful psychological adaptation (Pettigrew & Tropp, 2006). Positive intercultural interactions between members of different social and cultural groups can significantly foster beneficial intergroup outcomes, including positive attitudes, trust, and social connections with those they interact with (Allport, 1954; Yuan et al., 2024). Moreover, positive intercultural or intergroup contact can alleviate negative psychological outcomes, such as depression, prejudice, anxiety, and loneliness (Bai et al., 2023; Cruwys et al., 2014; Pettigrew & Tropp, 2006). Similarly, Bethel et al. (2020) emphasized that social connectedness, measured through friendships, frequency of contact, and feelings of belonging or social support, is a key predictor of intercultural adaptation. Furthermore, Hendrickson et al. (2011) suggest that student sojourners with more local friends and social networks tend to report greater satisfaction, happiness, and less homesickness. Based on this body of evidence, one can argue that positive intergroup interactions between international and

local students provide opportunities for developing a sense of belonging, social support, and a broader worldview among the interactants.

### **Intercultural sensitivity and psychological adaptation**

The study also provided evidence confirming the second hypothesis that intercultural sensitivity positively predicts psychological adaptation. Intercultural sensitivity, defined as an individual's ability to appreciate and respect cultural differences (Chen & Starosta, 2000), plays a crucial role in promoting positive psychological outcomes for international students. This finding highlights the direct impact of intercultural sensitivity on both the depression-happiness continuum and life satisfaction. Student sojourners with high intercultural sensitivity are likely to experience lower levels of depression and higher levels of happiness and life satisfaction. While intercultural sensitivity was significantly linked to psychological adaptation, the size of its individual contribution was modest, suggesting that other factors also play an important role in shaping adaptation outcomes. A comparison of these results with prior studies supports the significant relationship between intercultural sensitivity and adaptation outcomes such as self-esteem, academic adaptation, depression, happiness, and life satisfaction (Elijah et al., 2024; Lulan et al., 2020; Wilson et al., 2013). This relationship may be explained by the role of intercultural sensitivity in promoting adaptive coping strategies, such as seeking social support and engaging in positive reappraisal of challenging situations (Ward & Kennedy, 1994). These strategies are essential for managing the stressors associated with cultural adaptation, such as language barriers, academic pressure, and social isolation, thereby reducing the risk of depression while increasing feelings of happiness and satisfaction within the host culture. When students feel confident in their ability to navigate cultural differences, they are more likely to experience positive emotions such as happiness and satisfaction, which increases both their psychological well-being and overall life satisfaction. Intercultural sensitivity facilitates this process by enabling students to develop positive relationships, feel a sense of belonging, and engage in meaningful intercultural interactions (Vaccarino et al., 2021).

The results of the study also suggest that intercultural sensitivity is a stronger predictor of psychological adaptation than intergroup contact. This pattern can be explained within Ward and colleagues' theoretical framework of cross-cultural adaptation, which differentiates between psychological adaptation and sociocultural adaptation (Searle & Ward, 1990; Ward & Kennedy, 1994). Although both personal and situational variables can influence both forms of adaptation (Gebregergis & Csukonyi, 2025), Ward and colleagues argue that psychological adaptation is more closely associated with personal variables (e.g., personality traits, life changes, perceived social support), whereas sociocultural adaptation is more strongly shaped by situational variables (e.g., length of residence, cultural distance, or contact with host nationals) (Ward & Kennedy, 1994; Wilson et al., 2013). From this perspective, it is reasonable to expect that intercultural sensitivity, as a personal resource, would exert a stronger influence on psychological adaptation than the situational resource (i.e., intergroup contact with other nations). Moreover, because intercultural sensitivity is conceptualized as an affective component of intercultural communication competence (Chen & Starosta, 1997), its emotional orientation may be particularly important for managing adjustment challenges such as anxiety and depression (He et al., 2023).

## **The mediating effect of intergroup anxiety on intergroup contact and psychological adaptation**

Third, the expectation that intergroup anxiety mediates the relationship between intergroup contact and psychological adaptation has been supported. The findings suggest that student sojourners with more frequent and meaningful interactions with host nationals tend to feel less anxious and, consequently, experience greater happiness and satisfaction. Our study supports the assumption of intergroup anxiety theory, which posits that intergroup anxiety can serve as a potential mediator in the relationship between individual experiences, such as contact, and affective outcomes like uneasiness, worry, fear, and anger (Stephan, 2014). This assumption is also backed by empirical evidence from several prior general studies that have examined the significant mediating effects of intergroup anxiety on the connection between intergroup contact and intergroup intercultural adaptation outcomes, such as positive attitude and intercultural competence (Cao & Meng, 2020; Gebregergis & Csukonyi, 2025; Khukhlaev et al., 2022; Liang & Pho, 2025). Positive interactions between international and local individuals provide a foundation for building and maintaining intergroup friendships, which contribute to reduced anxiety and fewer stereotypes. This, in turn, promotes students' psychological adaptation. Student sojourners who establish positive contact with host nationals also gain social support, which can mitigate negative outcomes such as acculturative stress and anxiety, ultimately improving their intercultural adaptation (Pekerti et al., 2020). Conversely, students who are unable to engage in positive intergroup interactions may face negative outcomes, including perceived stereotypes, intergroup anxiety, perceived threat, prejudice, perceived discrimination, and stress (Pekerti et al., 2020; Pettigrew & Tropp, 2006). These challenges hinder their ability to form close connections with the host culture, ultimately leading to poor psychological adaptation, which may manifest as depression, dissatisfaction, and unhappiness.

## **The mediating effect of intergroup anxiety on intercultural sensitivity and psychological adaptation**

Our sample data also confirmed the final hypothesis that intergroup anxiety mediates the relationship between intercultural sensitivity and psychological adaptation. Interculturally sensitive student sojourners experience lower levels of fear and apprehension during intergroup interactions, leading to greater happiness, satisfaction, and fewer depressive symptoms. Intercultural sensitivity is understood as a set of abilities essential for effective social interactions in multicultural settings (Chen & Starosta, 1997). Student sojourners who cultivate positive emotions, appreciation, and respect for diverse cultures are better equipped to establish and maintain interpersonal relationships with people from different backgrounds, which can reduce their feelings of fear and anxiety, ultimately facilitating better psychological adaptation. It has also been argued that openness, empathy, appreciation, and respect for cultural diversity are essential elements of intercultural sensitivity that form the basis for quality social interactions, thereby impacting psychological well-being and promoting successful adaptation (Salihoglu, 2025; Vaccarino et al., 2021). Furthermore, stress and coping theory suggests that individuals who employ effective coping strategies (e.g., problem-focused coping) are capable of managing psychological challenges, such as stress and anxiety (Lazarus & Folkman, 1984). In a similar vein, the Anxiety/Uncertainty Management Theory of intercultural adaptation posits that successful intercultural adaptation relies on the sojourner's ability to handle the anxiety and uncertainty inherent in intercultural interactions (Gudykunst, 1995). Therefore, based on these theoretical frameworks, we can argue that the set of abilities of intercultural sensitivity, such as high self-esteem, open-mindedness, and cultural empathy, can act as coping resources for student sojourners.

## Implications of the study

**Theoretical implications.** Given the limited research on intergroup contact within the context of international higher education, our study significantly contributes to the existing body of knowledge by demonstrating the positive effects of intergroup contact on psychological adaptation. Additionally, it enhances our understanding of the role of domain-specific abilities, such as intercultural sensitivity, in facilitating psychological adaptation. Importantly, the study elucidates the mechanisms through which intergroup contact and intercultural sensitivity influence psychological adaptation by analyzing intergroup anxiety as a potential significant mediator. The findings also align with the fundamental theoretical assumptions of several established frameworks. The study provides empirical support for the core proposition of intergroup contact theory (Allport, 1954), demonstrating that frequent and high-quality interactions between groups promote positive intergroup outcomes and diminish negative intergroup experiences. Hence, our study extends the application of intergroup contact theory, which has traditionally focused on interactions between ethnic groups within the same country, to the context of contact between student sojourners and host nationals, who differ in language, culture, and ethnicity. Furthermore, the study supports a key assumption of the affective component of the ABC framework of adaptation, which draws on the stress and coping theory (Ward et al., 2005). It suggests that psychosocial resources such as intergroup contact and intercultural sensitivity serve as effective coping strategies that help individuals manage psychological adjustment challenges and achieve more positive adaptation outcomes, including greater happiness and life satisfaction.

**Practical implications.** The findings of this study can also provide valuable practical guidance for university communities, including academic tutors, administrators, and counselors, who all play crucial roles as agents in facilitating psychological adaptation by cultivating and developing positive intergroup contact and intercultural sensitivity of the student sojourners. University communities can adopt diverse support system strategies. One effective approach is facilitating meaningful connections between international and local people, as this can help student sojourners broaden their social networks, form friendships with locals, and develop a sense of belonging with the host community, which offers opportunities for cultural and language learning, social support, and mentorship (Altin-Gök et al., 2025; Bethel et al., 2020; Zhang et al., 2023). Specifically, organizing social, cultural, and academic activities such as sports events, cultural exchange programs, student excursions, and potluck gatherings that engage both groups can be highly beneficial (Bhowmik & Ahmad, 2025). Moreover, intensive short-term training or workshops have proven effective in promoting positive intergroup relationships (Ng et al., 2023), which are essential for quality intergroup contact and lasting friendships. Furthermore, educators are encouraged to adopt culturally sensitive and inclusive teaching methods to further enhance intergroup contact, intercultural sensitivity, and reduce intergroup anxiety. Equally, since intergroup and intercultural contact can naturally provoke stress and anxiety, university counselors should provide individual and group counseling services for students who may face negative intergroup or intercultural experiences, such as intergroup anxiety. Enhancing student sojourners' mental health awareness is crucial for addressing adjustment challenges (Teragishi et al., 2024), and counselors should prioritize fostering this awareness and positivity. Additionally, administrators in international education should provide students with detailed information regarding essential administrative matters, such as registration, immigration, transportation, housing, and access to healthcare services, because this information plays a crucial role in facilitating successful sociocultural adaptation (Huang et al., 2024).

Although the study was conducted in the Hungarian higher education context, the findings have broader international relevance and can benefit higher education institutions

across various host societies. This is because student sojourners globally face many common challenges, including language barriers, cultural differences, acculturative stress, and intergroup anxiety (Gebregergis & Csukonyi, 2025; Smith & Khawaja, 2011; Tang & Zhang, 2023). The psychosocial mechanisms examined in this study (i.e., intergroup contact and intercultural sensitivity) are not culture-specific in nature and can serve as meaningful but modest predictors of psychological adaptation. Consequently, the results provide valuable insights that can inform interventions and support programs for international students in diverse contexts.

### **Limitations and future research recommendations**

While this study offers both theoretical and practical contributions, it is not without limitations. As with all studies, several areas deserve attention in future research. First, the study's correlational and cross-sectional design limits the ability to draw causal conclusions and track changes in variables over time. Future research should validate these findings through experimental and longitudinal methods. Second, although intergroup contact might be better understood by including both international and local student samples, this study focused solely on international students. Conducting comparative research involving both groups in the future would provide a more comprehensive understanding of intergroup dynamics. Third, the use of self-report questionnaires may have introduced social desirability bias, potentially affecting the accuracy of the results. Future research might consider employing mixed methods to mitigate this issue. Fourth, as a quantitative study, this research may not capture the depth of intergroup and intercultural experiences, and we recommend supporting these findings with qualitative data. Finally, although the study was conducted at a university with the largest number of student sojourners in Hungary, the sample was limited to one institution, which may limit the generalizability of the results. Future studies should consider including multiple institutions for broader applicability.

### **Conclusion**

Student sojourners are particularly vulnerable to mental health challenges such as depression, anxiety, psychological distress, low satisfaction, low happiness, loneliness, frustration, and suicidal ideation, often at higher rates than their domestic peers (Alasmari, 2023; Prado et al., 2024). Given this alarming prevalence of mental health issues among student sojourners, it is of great importance to identify and understand the psychosocial factors that promote positive adaptation outcomes by alleviating adjustment difficulties. In light of this, the present study examined the roles of positive intergroup contact and intercultural sensitivity in facilitating psychological adaptation. The findings indicate that both intergroup contact and intercultural sensitivity are significant predictors of psychological adaptation. Additionally, the current study identified intergroup anxiety as a crucial mediating variable in the relationship between these factors and the outcome variables. More specifically, the mediation results further revealed that intergroup anxiety significantly mediated the relationships of intergroup contact and intercultural sensitivity with depression-happiness and life satisfaction. This study underscores that attributes such as intergroup contact and intercultural sensitivity are potential psychosocial resources for promoting psychological adaptation, both directly and indirectly, by reducing intergroup anxiety. By fostering these qualities and reducing intergroup anxiety, universities can support student sojourners in achieving better psychological adaptation and improving their overall experience in the host country.

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