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## Perceived Social Support as a Mediator in the Link between Loneliness and Well-being: Insights from the Transactional Model and Stress-Buffering Hypothesis

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International university students frequently encounter psychosocial challenges, including loneliness, cultural displacement, and limited social integration, which can undermine psychological well-being. Yet the role of perceived social support as a psychological mechanism linking loneliness to well-being in non-Western academic contexts remains under-examined. This study investigated whether perceived social support mediates the association between loneliness and psychological well-being among international students in Türkiye. Using a cross-sectional design, data were collected from 1,136 undergraduate international students who completed validated self-report measures of loneliness, perceived social support, and psychological well-being. Structural equation modeling with bootstrapped mediation analysis was employed to test the hypothesized relationships. Results indicated that loneliness was negatively associated with both perceived social support and psychological well-being, whereas perceived social support was positively associated with well-being. Mediation analysis revealed a significant indirect effect of loneliness on psychological well-being through perceived social support, with the direct association substantially reduced when support was included in the model. These findings highlight perceived social support as a central psychological mechanism through which loneliness affects well-being, underscoring the importance of culturally responsive interventions aimed at strengthening students' perceptions of social support. Findings are interpreted within the transactional stress model and the stress-buffering hypothesis.

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### Introduction

University adjustment is a multifaceted process involving both academic and socio-emotional adaptation, where social integration is important to psychological well-being (Credé & Niehorster, 2012). For international students, this process is further complicated by

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linguistic, cultural, and psychosocial barriers that limit full engagement in the host academic environment (Sawir, Marginson, Deumert, Nyland, & Ramia, 2008; Zhang & Goodson, 2011). Language proficiency is essential for academic success and for social connection; its absence hinders spontaneous engagement and fosters withdrawal (Lin & Scherz, 2014). Cultural incongruence amplifies these challenges, leading to misunderstandings, social exclusion, and internalized otherness, which hinder the formation of close relationships (Smith & Khawaja, 2011). Homesickness, exacerbated by the absence of familiar support, disrupts emotional balance and weakens motivation to build new social ties (Ferrara, 2022). These compounded challenges often lead to loneliness, a highly prevalent yet theoretically complex emotional state among international students, linked to depression, academic disengagement, and diminished life satisfaction (Diehl, Jansen, Ishchanova, & Hilger-Kolb, 2018; Zabin, Bosacki, & Novak, 2022). Despite an extensive presentation of these associations, less is known about the psychological mechanisms through which loneliness translates into diminished well-being, particularly in non-Western host contexts. Understanding international students' adjustment therefore requires examining not only whether loneliness matters, but how it undermines psychological well-being through specific socio-emotional processes.

Loneliness, distinct from social isolation, is the subjective gap between desired and actual relationships rooted in unmet needs for meaningful connection, not merely a lack of contact (Hawkley & Cacioppo, 2010; Perlman & Peplau, 1981). Whereas social isolation is objective, loneliness is psychological experience shaped by expectations, cultural norms, and situational appraisals. For international students, loneliness often stems from persistent struggles to form emotionally fulfilling relationships in unfamiliar environments (Wang et al., 2018). Intercultural miscommunication, perceived discrimination, and pressure to conform intensify these struggles, undermining authentic connection (Yang, He, & Xia, 2023). Unresolved chronic loneliness heightens vulnerability to depression, anxiety, and reduced resilience (Beutel et al., 2017; Loades et al., 2020). Longitudinal research further show that sustained loneliness among international students increases the risk of maladaptive coping and academic withdrawal (Diehl et al., 2018; Sawir et al., 2008). Indeed, loneliness in this population functions as a transient adjustment difficulty and as a persistent psychosocial stressor shaped by cultural displacement and disrupted support systems. Accordingly, loneliness can be conceptualized as a central psychological risk factor in international students' well-being rather than as an incidental byproduct of mobility.

Amid heightened loneliness and emotional vulnerability, perceived social support has consistently emerged as a key protective factor mitigating psychological risk among international students (Kovan & Usta, 2022; Sawir et al., 2008). Perceived social support refers to one's subjective sense of emotional, informational, or instrumental support drawn from family, friends, institutions, and cultural communities (Uchino, 2009; Zimet, Dahlem, Zimet, & Farley, 1988). Unlike objective indicators of social contact, perceived support emphasizes the *appraised availability and quality* of relationships, which are more strongly linked to mental health outcomes under stress (Rueger, Malecki, Pyun, Aycocock, & Coyle, 2016). Research indicate that high perceived support enhances emotional regulation, buffers stress and fosters a sense of belonging in unfamiliar cultural contexts (Kovan & Usta, 2022; Szkody, Rogers, & McKinney, 2020). Among international students, perceived support has been shown to reduce the psychological impact of loneliness by restoring emotional safety and interpersonal confidence (Shu, Ahmed, Pickett, Ayman, & McAbee, 2020). However, much of the existing literature treats perceived support as a correlational or moderating factor, leaving its potential role as an explanatory mechanism under-theorized. This limitation

constrains understanding of how loneliness becomes psychologically consequential.

At this point, psychological well-being encompassing emotional balance, life satisfaction, and positive functioning is a core indicator of successful psychosocial adjustment in university life (Diener, Oishi, & Tay, 2018). For international students, well-being reflects not only current mental health but also predicts academic persistence, engagement, and long-term development (Misra & Castillo, 2004; Vaez & Laflamme, 2008). Higher well-being supports cognitive functioning, emotional regulation, and adaptive coping, which are essential for navigating cross-cultural academic environments (Howell, 2009). Conversely, loneliness undermines this balance, eroding both emotional functioning and perceived quality of life (Beutel et al., 2017; Diehl et al., 2018). Perceived social support, in contrast, promotes well-being by fostering connection, self-worth, and emotional security (Baria & Gomez, 2022; Rueger et al., 2016). Taken together, these findings suggest that psychological well-being emerges from the dynamic interplay between social risk and coping resources, highlighting the need to examine their interrelations within an integrated theoretical model.

Building on this conceptual foundation, the present study investigates the relationship between loneliness and psychological well-being among international university students, with a specific focus on the mechanistic role of perceived social support. Although international students are frequently described as a vulnerable population, they remain relatively underrepresented in theory-driven psychological models, particularly with respect to the socio-emotional processes linking stress and well-being (Wang et al., 2018; Zhang & Goodson, 2011). Moreover, existing studies have largely been conducted in Western, English-speaking host countries, limiting the generalizability of current models to culturally distinct academic environments. Addressing these gaps, the current study proposes and empirically tests a mediation model in which loneliness undermines psychological well-being *indirectly* by reducing perceived social support, thereby clarifying the psychological pathway through which social disconnection affects well-being in a non-Western host context.

This study is anchored in Lazarus and Folkman's (1984) transactional model of stress and coping, which conceptualizes psychological outcomes as products of stress appraisal and perceived coping resources. This framework is complemented by the stress-buffering hypothesis proposed by Cohen and Wills (1985), which posits that social support can attenuate the psychological impact of stressors such as loneliness. While the stress-buffering hypothesis is often examined through moderation models, the present study extends this framework by testing perceived social support as a mediating appraisal mechanism that explains how loneliness translates into diminished well-being. By empirically evaluating this theoretically informed mediation model within a culturally underexamined context, the study advances existing literature by moving beyond descriptive associations toward a process-oriented understanding of international students' psychological adjustment. The findings further offer practical implications for culturally responsive support services and institutional policies aimed at fostering social inclusion and emotional resilience.

### ***Association between loneliness, psychological well-being, and perceived social support***

Theoretical frameworks are essential in quantitative psychology they guide hypothesis formulation and ensure coherence and interpretive clarity throughout the research process (Maxwell, 2004). Grounding research in theory enables systematic understanding of constructs and strengthens causal inferences by linking findings to established models.



Accordingly, this study adopts Lazarus and Folkman's (1984) transactional stress model to conceptualize loneliness as a psychosocial stressor, emphasizing the role of coping resources in shaping outcomes. The model views emotions like loneliness as cognitively appraised in relation to perceived coping resources such as social support.

Furthermore, Cohen and Wills's (1985) stress-buffering hypothesis complements this view, proposing that social support mediates and softens the psychological impact of stressors like social disconnection. Together, these models frame loneliness as an emotionally aversive state rooted in perceived relational deficits, while positioning social support as a buffer that mitigates distress and promotes well-being. By grounding the study in these models, it gains explanatory depth and contributes to broader discussions on coping, resilience, and socio-emotional adjustment in multicultural settings.

Loneliness is a multidimensional construct defined by the subjective perception of inadequate or unfulfilling social relationships, regardless of interaction frequency (Hawkey & Cacioppo, 2010; Perlman & Peplau, 1981). Literature distinguishes two dimensions of loneliness: emotional loneliness the absence of intimate ties and social loneliness a perceived lack of group belonging (DiTommaso, Fizell, & Robinson, 2015; Weiss, 1975). For international students, both forms often co-occur due to cultural displacement and the disruption of established support networks (Hendrickson, Rosen, & Aune, 2011; Sawir et al., 2008). This vulnerability has increased depressive symptoms: persistent loneliness in international students correlates with distress, lower life satisfaction, and increased risk of depression and anxiety (Backhaus et al., 2023; Diehl et al., 2018). Loneliness is not just a side effect of transition it's a core psychological barrier to well-being and adaptation. Based on this, the study proposes:

H<sub>1</sub>. Loneliness is negatively associated with psychological well-being.

On the other hand, perceived social support refers to one's subjective sense of accessible emotional, instrumental, or informational help distinct from received or objective support, which reflects actual exchanges (Lakey & Orehek, 2011; Zimet et al., 1988). Unlike objective support, which varies situationally, perceived support tends to be stable and more predictive of psychological outcomes under stress (Rueger et al., 2016). For international students, perceived support buffers the psychological impact of social displacement and cultural dissonance, reducing the emotional toll of loneliness (Yang et al., 2023). Research shows that individuals with high perceived support report less stress, anxiety, and depression and greater well-being even if their social network is small (Kovan & Usta, 2022; Shu et al., 2020; Szkody et al., 2020). Here, perceived support is positioned not only as a buffer but also as a mediator linking loneliness and well-being. Loneliness may reduce perceived support, which then lowers emotional stability and well-being. Accordingly, the study posits:

H<sub>2</sub>. Perceived social support is negatively associated with loneliness.

H<sub>3</sub>. Perceived social support is positively associated with psychological well-being.

Research consistently shows that loneliness undermines well-being, while perceived support buffers its negative effects highlighting their dynamic interplay (Cacioppo, Hughes, Waite, Hawkey, & Thisted, 2006; Santini, Koyanagi, Tyrovolas, Mason, & Haro, 2015). Among university students, including internationals, strong perceived support reduces the psychological distress linked to loneliness and sustains emotional well-being (Hendrickson et

al., 2011; Wang et al., 2018). In a comprehensive meta-analysis, Bender, van Osch, Slegers, and Ye (2019) found that even among international students reporting high levels of loneliness, those who perceived strong social support exhibited significantly fewer depressive symptoms. This suggests that perceived support may operate as a psychological buffer, attenuating the emotional harm caused by social disconnection.

Despite growing recognition of this buffering function, few studies have empirically tested mediation models wherein perceived social support is positioned as the intermediary mechanism through which loneliness affects psychological well-being. Though bidirectional effects are possible, recent studies recommend testing directional hypotheses to better understand causal pathways (Rueger et al., 2016; Szkody et al., 2020). While the potential for bidirectional or reciprocal relationships cannot be dismissed, contemporary methodological approaches emphasize the importance of testing directional mediation models to clarify the psychological pathways involved. In response to this gap, the present study proposes a conceptual mediation model wherein loneliness negatively influences perceived social support, which in turn reduces psychological well-being. This indirect pathway aligns with theoretical models and fills a critical void in the empirical literature by assessing the mechanism of emotional adaptation within international student populations.

Drawing on foundational theories of stress and coping, the transactional model of stress and coping (Lazarus & Folkman, 1984) conceptualizes loneliness as a chronic social stressor that challenges emotional equilibrium. Concurrently, the stress-buffering hypothesis (Cohen & Wills, 1985) identifies perceived social support as a key moderating or mediating variable that reduces the negative psychological outcomes of such stress. In line with these frameworks, perceived support may facilitate adaptive coping by fostering a sense of emotional safety, resilience, and interpersonal confidence (Hawkley & Cacioppo, 2010; Wang et al., 2018). However, despite strong theoretical rationale and preliminary empirical evidence, the mediating role of perceived support in the relationship between loneliness and well-being remains under-examined, especially among international students adjusting to unfamiliar academic and sociocultural environments. Therefore, the present study formulates the following hypothesis:

H4. Perceived social support mediates the relationship between loneliness and psychological well-being.

## **Method**

### ***Design***

This study utilized a quantitative, correlational design to examine whether perceived social support mediates the relationship between loneliness and psychological well-being in international students studying in Türkiye. This design was appropriate for assessing naturally occurring relationships among psychological variables without manipulation (Goodwin & Goodwin, 2016). The model tested whether loneliness (independent variable) influenced psychological well-being (dependent variable), both directly and indirectly via the mediator: perceived social support.

The mediation approach assessed whether perceived support statistically accounts for the link between loneliness and well-being, clarifying the underlying mechanism (Hayes, 2018). This analytical strategy reflects methodological rigor by aligning with the study's theoretical



grounding in the transactional stress model and stress-buffering hypothesis. The cross-sectional design captures the interaction of emotional and social variables in international students, supporting hypothesis testing and model validation (Curtis, Comiskey, & Dempsey, 2016).

### *Participants and procedure*

The sample comprised 1,136 international undergraduate students enrolled at public universities in Türkiye. Of these, 310 identified as female (27.2%) and 826 as male (72.8%). Participants ranged in age from 17 to 33 ( $M_{\text{age}} = 21.33$ ,  $SD = 2.61$ ), representing a predominantly young adult cohort adjusting to foreign academic and cultural contexts. Detailed demographic characteristics are presented in Table 1.

Table 1. Demographics

Variables	N	%	
Nationality	Kazakhstan	317	27.9
	Azerbaijan	250	22
	Sudan	351	30.8
	Indonesia	41	3.6
	Kyrgyzstan	25	2.2
	Iraq	16	1.4
	Turkmenistan	33	2.9
	Ivory Coast	25	2.2
	Others	75	6.6
Length of stay in Türkiye (in years)	1 year	293	25.7
	2 years	168	14.7
	3 years	200	17.6
	4 years	142	12.5
	5 years	192	16.9
	≥ 5 years	143	12.6

Ethical approval was secured from the relevant institutional review board (Giresun University, Approval No: E-50288587-050.01.04-53661, 11/5), ensuring adherence to ethical standards on consent, confidentiality, and voluntary participation. Following approval, survey instruments were digitized and administered via a secure online platform. Participants were recruited through institutional emails, student networks, and social media platforms targeting international student communities. They were informed of the study's purpose, voluntary nature, and their right to withdraw at any time without penalty. To protect anonymity, no identifying information was collected. Electronic informed consent was obtained prior to participation. Online data collection enhanced accessibility and convenience, accommodating the geographic and cultural diversity of the sample.

### *Measures*

Loneliness was measured using the *UCLA Loneliness Scale* (Russell, 1996), adapted to Turkish by Demir (1989). The scale includes 20 unidimensional items rated on a 4-point Likert scale ("never" to "often"). Items include a balanced mix of positive and negative phrasing to reduce response bias. Scores range from 20 to 80, with higher scores indicating greater loneliness. The scale shows excellent psychometric properties ( $\alpha = .96$ ; test-retest reliability = .94; Demir, 1989). In this study, internal consistency was high (Cronbach's  $\alpha = .82$ ), confirming its reliability for the sample.

Perceived social support was measured with the *Multidimensional Scale of Perceived Social Support* (Zimet et al., 1988), adapted to Turkish by Eker and Arkar (1995). The scale includes 12 items across three subscales: Family, Friends, and Significant Other, and each comprising four items. Responses are rated on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree); total scores range from 12 to 84, with higher scores indicating greater perceived support. The original version showed high reliability ( $\alpha = .89-.92$ ); internal consistency in this study was similarly strong ( $\alpha = .93$ ).

Psychological well-being was assessed using the *Psychological Well-Being Scale* (Diener et al., 2010), validated in Turkish by Telef (2013). It contains 8 positively worded items measuring aspects of eudaimonic well-being meaning, engagement, and relational competence on a 7-point Likert scale. Scores range from 8 to 56; higher scores reflect greater psychological well-being. The scale has shown good reliability in prior studies ( $\alpha = .80$ ; Telef, 2013) and demonstrated excellent internal consistency here ( $\alpha = .92$ ).

### **Data analysis**

Data analysis proceeded in five sequential stages to ensure both statistical rigor and theoretical alignment. First, psychometric analyses were performed to assess the validity and reliability of the measurement instruments. Cronbach's  $\alpha$  was calculated for internal consistency, with all scales demonstrating satisfactory reliability, as noted in the Measures section. Second, descriptive statistics including means, standard deviations, skewness, and kurtosis were computed to assess distributional properties and justify parametric analysis.

Third, Pearson correlation coefficients were used to examine bivariate relationships among loneliness, perceived social support, and psychological well-being, given their continuous and normally distributed nature. Fourth, Confirmatory Factor Analysis (CFA) was conducted to evaluate the structural validity of the latent constructs. Because loneliness and psychological well-being were conceptualized and empirically supported as unidimensional constructs, item parceling was employed to enhance model parsimony and indicator reliability rather than to mask multidimensionality or item-level misfit (Little, Rioux, Odejimi, & Stickley, 2022). Parceling was used to reduce model complexity and estimation demands in the context of a large-item scale and a structurally focused SEM framework. Parcels were formed according to item factor loadings, following established guidelines for theory-driven parceling. Five parcels were created for loneliness and three for psychological well-being. For perceived social support, which comprises Family, Friends, and Significant Other dimensions, each subscale was treated as a parcel to reflect its theoretically established multidimensional structure (Zimet et al., 1988). Although item parceling is sometimes debated, it is considered appropriate when constructs are theoretically unidimensional and the primary analytical goal is to test relationships among latent variables rather than to conduct item-level diagnostic analyses. In the present study, parceling was used to support stable estimation and interpretability of the structural model, consistent with recommendations for mediation-focused SEM (Little et al., 2022).

Later, mediation analysis tested whether perceived social support mediated the relationship between loneliness and psychological well-being. The mediation model was estimated within an SEM framework, with indirect effects evaluated using bootstrapping procedures. Although Baron and Kenny's (1986) criteria informed the conceptual logic of mediation, statistical inference relied on bootstrapped confidence intervals, which provide a more powerful and accurate test of indirect effects (Hayes, 2018; Preacher & Hayes, 2008). Bootstrapping used



5,000 resamples and bias-corrected 95% confidence intervals, offering a non-parametric estimate of the indirect effect’s sampling distribution. Indirect effects were deemed significant if the confidence interval excluded zero. This multi-step approach aligned with the study’s theoretical framework and allowed for a robust test of the hypothesized mediation model.

**Results**

**Validity and reliability of measures**

CFA was conducted for each scale to assess structural validity. Internal consistency was evaluated using Cronbach’s  $\alpha$ . CFA fit indices indicated acceptable to good model fit across all three scales. Chi-square/degrees of freedom ( $\chi^2/df$ ) values ranged from 1.89 to 2.71 within the acceptable range ( $< 3$ ), suggesting good model fit (Kline, 2015). RMSEA values (.07–.09) were within acceptable limits ( $\leq .10$ ; Browne & Cudeck, 1993). CFI ranged from .85 to .97, while GFI and IFI were above .90 for most scales, supporting structural soundness (Hu & Bentler, 1999).

Reliability analyses further supported the psychometric adequacy of the instruments. Cronbach’s  $\alpha$  values were .82 (loneliness), .92 (well-being), and .93 (perceived social support). All values exceeded the .70 benchmark, indicating strong internal consistency (Nunnally & Bernstein, 1994). Together, these findings confirm that the instruments are both valid and reliable for use with international students in the Turkish higher education context. Detailed results of the validity and reliability analyses are presented in Table 2.

Table 2. Validity and reliability of measures

Parameter	ULS	PWBS	MSPSS
$\chi^2/df$	2.71	1.94	1.89
RMSEA	.09	.08	.07
CFI	.85	.97	.96
GFI	.93	.93	.90
IFI	.86	.97	.96
Cronbach’s $\alpha$	.82	.92	.93

Note. ULS: UCLA loneliness scale; PWBS: Psychological well-being scale; MSPSS: Multidimensional scale of perceived social support

**Descriptive statistics and correlations**

Descriptive statistics for loneliness, perceived social support, and psychological well-being are reported in Table 3. Means, standard deviations, skewness, kurtosis, and inter-correlations were computed to assess distributional properties and preliminary associations among variables. The mean loneliness score was 43.85 ( $SD = 9.62$ ), reflecting moderate levels of perceived loneliness. Mean scores were 38.96 ( $SD = 11.57$ ) for psychological well-being and 58.41 ( $SD = 18.22$ ) for perceived social support, indicating generally positive perceptions of support and well-being alongside substantial individual variability.

Table 3. Descriptive statistics and correlations

Variables	M	SD	1	2	3	Skewness	Kurtosis
1. Lone	43.85	9.62	1	-.52**	-.64**	-.29	.01
2. PWB	38.96	11.57		1	.56**	-.93	-.17
3. PSS	58.41	18.22			1	-.65	.58

Note. N = 1,136; Lone = Loneliness; PWB: Psychological well-being; PSS: Perceived social support; \*\* $p < .01$



Skewness and kurtosis values for all variables fell within  $\pm 1$ , suggesting approximately normal distributions suitable for parametric analyses (George & Mallery, 2010). Pearson correlation coefficients revealed significant associations among the key variables. Loneliness was negatively correlated with psychological well-being ( $r = -.52, p < .01$ ) and perceived social support ( $r = -.64, p < .01$ ), while perceived social support was positively correlated with psychological well-being ( $r = .56, p < .01$ ). These associations provide an appropriate empirical basis for subsequent mediation analyses.

### Testing the model

Structural equation modeling (SEM) was used to test the proposed mediation model, in which perceived social support mediates the relationship between loneliness and psychological well-being. Model fit was assessed using multiple goodness-of-fit indices, each capturing distinct aspects of model adequacy. The chi-square/df ratio was 1.99, indicating good model fit (values  $< 2$  are considered optimal; Kline, 2015). RMSEA was .09, within the acceptable range of .05–.10 (Browne & Cudeck, 1993). SRMR was .06, meeting the acceptable threshold of  $< .08$  (Hu & Bentler, 1999). The GFI was .89 slightly below the .90 threshold for good fit but still within an acceptable range. CFI and IFI were both .95, reflecting excellent model fit (values  $> .90$  indicate good fit; Bentler, 1990). Collectively, these indices indicate satisfactory model fit, supporting the validity of the hypothesized mediation framework and permitting interpretation of structural paths.

### Mediation analysis

Path analysis was conducted to test the proposed relationships among loneliness, perceived social support, and psychological well-being. Figure 1 presents the structural model and standardized coefficients; complete results are reported in Table 4.

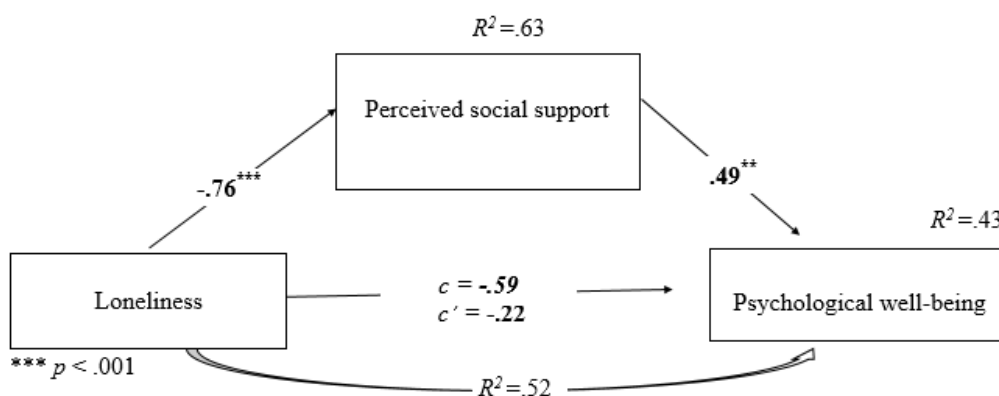


Figure 1. Path diagram of mediation analysis

Table 4. Mediation analysis as total, direct, and indirect estimates of loneliness on psychological well-being

Paths	Stand. Coef.	LLCI	ULCI	R <sup>2</sup>
<i>Total Effect</i>				
Loneliness → Psychological well-being	-.59	-.74	-.38	.52
<i>Direct Effect</i>				
Loneliness → Psychological well-being	-.22	-.64	-.13	
Loneliness → Perceived social support	-.76	-.85	-.66	.63
Perceived social support → Psychological well-being	.49	.017	.93	
<i>Indirect Effect</i>				
Loneliness → Perceived social support → Psychological well-being	-.38	-.76	-.023	.43

\*\*\*  $p < .001$ ; LLCI: Lower limit of the confidence interval; ULCI: Upper limit of the confidence interval

Loneliness had a significant negative total effect on psychological well-being ( $\beta = -.59$ , 95% CI  $[-.74, -.38]$ ,  $p < .001$ ), supporting H<sub>1</sub>. Loneliness was also negatively associated with perceived social support ( $\beta = -.76$ , 95% CI  $[-.85, -.66]$ ,  $p < .001$ ), supporting H<sub>2</sub>. Perceived social support positively predicted psychological well-being ( $\beta = .49$ , 95% CI  $[.017, .93]$ ,  $p < .001$ ), supporting H<sub>3</sub>. Mediation analysis revealed a significant indirect effect of loneliness on psychological well-being through perceived social support ( $\beta = -.38$ , 95% CI  $[-.76, -.02]$ ). After inclusion of perceived social support in the model, the direct effect of loneliness on psychological well-being was substantially reduced in magnitude (from  $\beta = -.59$  to  $\beta = -.22$ ), indicating that a large proportion of the association between loneliness and well-being operates through perceived support. These findings support H<sub>4</sub> by demonstrating substantial mediation, highlighting perceived social support as a key psychological mechanism linking loneliness and psychological well-being among international students. The model explained 63% of the variance in perceived social support and 43% of the variance in psychological well-being, underscoring the explanatory strength of the proposed framework.

## Discussion

The primary aim of this study was to investigate how loneliness relates to the psychological well-being of international university students and to examine whether this relationship operates through perceived social support as a mediating mechanism. Drawing on Lazarus and Folkman's (1984) Transactional Model of Stress and Coping and Cohen and Wills's (1985) Stress-Buffering Hypothesis, the study sought to move beyond documenting associations by clarifying the psychological process through which loneliness becomes consequential for well-being in a population navigating cultural displacement and social transition. This process-oriented focus represents a key distinctive feature of the study, as much of the existing literature remains descriptive or correlational in nature.

H<sub>1</sub> was supported, with a significant negative association identified between loneliness and psychological well-being. This finding indicates that higher levels of loneliness are associated with lower emotional functioning, life satisfaction, and overall psychological health. Conceptually, this result aligns with the definition of loneliness as a distressing psychological experience arising from perceived deficiencies in one's social relationships (Perlman & Peplau, 1981). For international students, who are often separated from established support systems and embedded in unfamiliar academic and social environments, this association may be particularly salient.

Consistent with prior research, the present findings reinforce loneliness as a critical risk factor for psychological distress. Previous studies have linked loneliness with depression, anxiety,

and diminished quality of life across general and student populations (Diehl et al., 2018; Hawkey & Cacioppo, 2010). Among international students specifically, loneliness has been associated with lower academic motivation and reduced emotional resilience (Sawir et al., 2008; Wang et al., 2018). What distinguishes the present findings is not the existence of this association, but its strength and interpretation within a non-Western host-country context, where linguistic barriers, cultural distance, and institutional unfamiliarity may intensify the appraisal of social disconnection. Rather than representing a transient phase of cultural adjustment, loneliness in this context appears to function as a persistent psychosocial stressor with meaningful implications for well-being.

Some studies have reported weaker or non-significant associations between loneliness and well-being, particularly in environments characterized by strong institutional or peer-based support (e.g., Kearns, Whitley, Tannahill, & Ellaway, 2015). The comparatively strong association observed in the present study may reflect contextual features of the host environment, including language barriers and limited access to culturally familiar support networks in Türkiye. From the perspective of the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984), international students may appraise the absence of culturally resonant relationships as especially threatening, thereby amplifying the psychological impact of loneliness. This interpretation highlights how structural and cultural contexts shape stress appraisals, rather than treating loneliness as a uniform experience across settings.

Moreover, H<sub>2</sub> was also supported, revealing a strong inverse relationship between perceived social support and loneliness. Students who perceived higher levels of emotional and instrumental support reported significantly lower loneliness. This result is consistent with core assumptions in loneliness theory, which emphasize that loneliness reflects the perceived inadequacy of emotionally meaningful relationships rather than the sheer number of social contacts (Russell, 1996; Weiss, 1975). The finding aligns with prior research showing that perceived social support reduces loneliness across diverse populations, including students, immigrants, and older adults (Lin & Scherz, 2014; Rueger et al., 2016; Sawir et al., 2008). Among international students, support from peers and institutional networks has been linked to stronger feelings of belonging and reduced cultural alienation (Kovan & Usta, 2022).

Importantly, the present study interprets this association through an appraisal-based lens, suggesting that perceived support operates not merely as a social resource, but as a cognitive evaluation that shapes how social disconnection is experienced. Cross-cultural research indicates that the protective role of perceived support may vary across cultural contexts, particularly in collectivist societies where support is often implicitly expected rather than explicitly articulated (Misra & Castillo, 2004; Wang et al., 2018; Yang et al., 2023). Within this framework, the strong association observed in the present study may reflect the heightened salience of support appraisals among international students operating outside their cultural comfort zones. Türkiye's socio-cultural context characterized by collectivist traditions alongside Western-influenced institutional structures may intensify the psychological importance of perceiving support as available and meaningful. These findings reinforce the appraisal component of Lazarus and Folkman's model, emphasizing that psychological outcomes depend on available resources and on how those resources are perceived and evaluated.

Next, H<sub>3</sub> was also confirmed, with perceived social support positively associated with psychological well-being. International students who perceived greater support from family, friends, or significant others reported higher levels of psychological well-being. This result is

consistent with extensive evidence demonstrating the protective role of perceived support in promoting emotional balance and positive functioning (Uchino, 2009; Zimet et al., 1988). In academic contexts, perceived support has been linked to reduced stress, improved emotional adjustment, and stronger academic engagement (Wilcox, Winn, & Fyvie-Gauld, 2005). Among international students, support has also been shown to buffer acculturative stress and foster a sense of community belonging (Wang et al., 2018).

At the same time, previous studies suggest that the effectiveness of social support may depend on its source and cultural relevance. Support that lacks emotional attunement or cultural resonance may be less effective, even when objectively available (Gareis, Merkin, & Goldman, 2011). The robust association observed in this study may partly reflect the multidimensional assessment of perceived support, which captures distinct relational sources rather than treating support as a unitary construct. From a theoretical standpoint, this finding reinforces Cohen and Wills's (1985) proposition that perceived support enhances resilience in the face of chronic stressors. Beyond buffering distress, perceived support appears to actively promote well-being by reinforcing self-worth and social connectedness, a distinction that is often underemphasized in the literature (Pan & Ye, 2025).

The main contribution of this study lies in testing H<sub>4</sub>, which examined perceived social support as a mediating mechanism linking loneliness and psychological well-being. The results indicated a significant indirect effect of loneliness on well-being through perceived support. Although the direct association between loneliness and psychological well-being remained statistically significant after accounting for perceived support, it was substantially reduced in magnitude, indicating that a large proportion of loneliness's psychological impact operates through changes in how supported individuals feel. This pattern suggests substantial rather than complete mediation, shifting the interpretation of loneliness from a direct determinant of well-being to a stressor whose effects are largely filtered through cognitive appraisals of relational resources. Rather than exerting its influence in isolation, loneliness appears to affect well-being primarily by shaping students' perceptions of available social support. This interpretation aligns with Cohen and Wills's (1985) stress-buffering hypothesis and with Lazarus and Folkman's (1984) emphasis on cognitive appraisal in stress processes, underscoring perceived support rather than objective social contact as a key psychological filter through which loneliness is translated into emotional outcomes (Burholt, Windle, Morgan, & CFAS Wales Team, 2017).

By demonstrating this indirect pathway, the present study extends prior work that has often emphasized partial mediation or moderation effects (Rueger et al., 2016; Szkody et al., 2020). The substantial mediation pattern observed in this study suggests that, for international students, perceived social support represents a particularly central mechanism linking social stress to emotional outcomes. The findings suggest that, for international students navigating stress in the absence of familiar cultural support systems, the psychological meaning attached to perceived support may be particularly central. While domestic students may interpret institutional or peer support as readily accessible, international students may encounter structural or cultural barriers that complicate such interpretations (Kovan & Usta, 2022). Consequently, diminished perceptions of support may become the primary pathway through which loneliness undermines mental health.

Furthermore, the strength of the indirect effect may reflect the multidimensional nature of perceived support assessed in this study. Different sources of support family, friends, and significant others may vary in salience depending on cultural background and living

arrangements. In collectivist cultures, family often plays a central role in emotional regulation and identity formation (Friedlmeier, Corapci, & Cole, 2011). When access to this support is disrupted by international mobility, loneliness may exert particularly strong effects unless alternative, culturally meaningful sources of support are perceived as available (Diehl et al., 2018; Sawir et al., 2008; Zabin et al., 2022). These findings suggest that psychological well-being among international students is shaped less by isolation per se than by how isolation alters perceived access to meaningful social connection. This insight shifts the focus from simply reducing loneliness to strengthening students' perceptions of support through culturally responsive peer programs, counseling services, and inclusive institutional practices. Theoretically, it underscores the indirect, process-oriented nature of psychological vulnerability, and calls for interventions that address both the emotional and cognitive dimensions of social experience in global higher education contexts. Theoretically, this study contributes by foregrounding cognitive appraisal as a key bridge between social stressors and psychological outcomes, thereby extending stress and coping models into the domain of international student adjustment. This process-oriented perspective underscores the importance of interventions that target not only social contact, but also students' perceptions of support availability and relevance within culturally diverse academic environments.

### ***Limitations and future directions***

While this study offers meaningful insights into the mediating role of perceived social support in the relationship between loneliness and psychological well-being among international students, several limitations warrant careful consideration. First, the sample was drawn exclusively from public universities in Türkiye. Although these institutions host diverse international student populations, the findings may not reflect the full range of experiences across other institutional types (e.g., private universities, technical colleges) or regions within Türkiye. Factors such as campus culture, availability of student services, and urban versus rural location may substantially influence students' perceptions of support and experiences of loneliness.

Moreover, the distribution of participants across countries of origin was uneven, with a substantial proportion of the sample drawn from a small number of countries, particularly Sudan and Kazakhstan. This imbalance represents an important limitation for the generalizability of the findings, as international students from different national, cultural, linguistic, and geopolitical backgrounds may experience loneliness, social support, and psychological well-being in qualitatively different ways. Cultural norms surrounding emotional expression, reliance on family versus peer support, and expectations of institutional assistance may vary considerably across countries, potentially shaping both perceived support and responses to loneliness. As a result, the present findings should be interpreted as most representative of international students from regions that are more strongly reflected in the sample, rather than as universally applicable to all international student populations. While the large overall sample size strengthens statistical power, it does not fully compensate for the lack of proportional representation across countries of origin. Future research would benefit from stratified or multi-site sampling strategies that ensure broader and more balanced national representation, or from comparative designs that explicitly examine country- or region-specific patterns in the relationships among loneliness, perceived social support, and psychological well-being. As a result, the present findings should be interpreted as most representative of international students from regions that are more strongly reflected in the sample, rather than as universally applicable to all international student populations. While the large overall sample size strengthens statistical power, it does not fully compensate for the



lack of proportional representation across countries of origin. Future research would benefit from stratified or multi-site sampling strategies that ensure broader and more balanced national representation, or from comparative designs that explicitly examine country- or region-specific patterns in the relationships among loneliness, perceived social support, and psychological well-being. In this context, future research could employ multi-group or cross-cultural SEM designs, provided sufficiently balanced samples and established measurement invariance, to examine whether the mediation pathways identified here vary across cultural or national groups.

A particularly important limitation concerns the gender imbalance of the sample, with 72.8% of participants identifying as male. This imbalance represents a substantive methodological constraint, as gender differences have been documented in emotional expression, help-seeking behavior, and perceptions of social support. Prior research suggests that female students may report higher emotional loneliness but also higher perceived support, whereas male students may underreport emotional distress or rely on different support strategies. As a result, the observed associations among loneliness, perceived social support, and psychological well-being may reflect gendered patterns of appraisal and coping that are not equally representative of female international students. Consequently, caution is warranted when generalizing the present findings across genders. Future research should aim to recruit more gender-balanced samples or explicitly examine gender as a moderating variable within mediation models to determine whether the psychological pathways identified here operate similarly for male and female students. Such analyses would allow for more detailed conclusions regarding gender-specific adjustment processes and would strengthen the explanatory power of stress and coping frameworks in cross-cultural student populations.

In addition, the cross-sectional design of the study limits causal inference. Although the mediation model is theoretically grounded and statistically supported, the temporal ordering of loneliness, perceived social support, and psychological well-being cannot be conclusively established. It is plausible that lower psychological well-being may reduce perceptions of support or intensify feelings of loneliness, rather than the reverse. Longitudinal or multi-wave designs would help disentangle these bidirectional or reciprocal relationships and clarify how social support and loneliness dynamically influence well-being over time. Furthermore, the reliance on self-report measures, while psychometrically robust, introduces the possibility of common method variance and socially desirable responding, particularly in cultural contexts where emotional vulnerability may be stigmatized. Despite assurances of anonymity, cultural norms may have influenced participants' willingness to report loneliness or perceived support accurately. Future research could benefit from incorporating mixed-method approaches, including qualitative interviews or behavioral indicators of social engagement, to enrich understanding of how international students interpret and experience support and loneliness. Finally, future studies may expand the present model by examining moderating variables such as cultural distance, acculturation strategies, language proficiency, or personality traits (e.g., introversion or social anxiety). Incorporating these factors would enable more refined, culturally responsive models of psychological adjustment and guide targeted intervention strategies for diverse international student populations.

### ***Practical and theoretical implications***

The findings hold meaningful contributions to both psychological theory and applied practice. Theoretically, the study reinforces and extends the transactional model of stress and coping and the stress-buffering hypothesis by demonstrating that perceived social support

plays a substantial mediating role in the association between loneliness and psychological well-being. Rather than positioning loneliness as a direct and isolated determinant of well-being, the results highlight perceived support as a key cognitive–affective mechanism through which loneliness becomes psychologically consequential. This process-oriented interpretation adds conceptual clarity by suggesting that emotional distress arises not solely from social disconnection itself, but from how such disconnection reshapes individuals’ appraisals of available relational resources. More broadly, the findings underscore the value of interactional and appraisal-based frameworks for understanding psychological vulnerability among globally mobile students.

From a practical perspective, it has clear implications for university-based interventions and student support services. Institutions serving international students can move beyond increasing the quantity of social contact to strengthening the perceived accessibility, emotional quality, and cultural relevance of support. This may involve peer mentoring initiatives aligned with shared cultural or linguistic backgrounds, intercultural group-based coursework that fosters sustained interaction, or counseling services that explicitly address cross-cultural expectations surrounding help-seeking and support. Rather than relying on generic service provision, institutional investment should prioritize cultivating relational trust and meaningful connection. Importantly, the substantial mediating role of perceived support suggests that interventions aimed at reducing loneliness may be less effective if they do not simultaneously enhance students’ perceptions of being supported. Campus mental health services, international offices, and student affairs teams should recognize that well-being is closely tied to subjective appraisals of support adequacy, not merely the presence of social opportunities. Faculty and staff development programs may also benefit from training in relational attunement, enabling educators to better recognize and respond to the emotional needs of students navigating complex cultural and academic transitions.

## **Conclusion**

This study makes a substantive contribution to the psychological literature on international student adjustment by offering a theoretically grounded and empirically supported model of how loneliness relates to psychological well-being through the mediating role of perceived social support. Drawing on foundational theories of stress and coping and the stress-buffering function of social resources, the findings suggest that perceived support functions as a central cognitive–affective mechanism through which loneliness becomes psychologically consequential. Rather than operating as a direct determinant of well-being in isolation, loneliness appears to affect emotional health largely by shaping individuals’ appraisals of available relational resources, highlighting the importance of subjective social evaluations in the adjustment process.

The study also contributes to cross-cultural psychology and international education by examining these processes within the Turkish higher education context, an increasingly important yet underexamined non-Western host setting. By situating loneliness within a broader cognitive–affective system, the findings extend existing research beyond descriptive associations and refine current understanding of how risk and resilience processes unfold among internationally mobile students. Although the cross-sectional design precludes causal inference, the model demonstrates substantial explanatory value and provides a theoretically coherent framework for future longitudinal and comparative research. In practical terms, the results underscore the need for institutional approaches that address not only social isolation but also students’ perceptions of support availability and relevance. Interventions that foster



culturally meaningful, emotionally attuned forms of support may be particularly effective in promoting psychological well-being among international students. Therefore, the study offers theoretically informed insight and actionable implications, reinforcing its relevance for researchers, educators, and policymakers seeking to support the mental health and integration of international student populations.

## Declarations

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**Conflict of Interest:** The author(s) declare no conflicts of interest regarding this article.

**Informed Consent:** Consent was obtained from all participants included in the study.

**Data availability:** The data from the current study are available from the corresponding author upon reasonable request.

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