






# Roles of loneliness and life satisfaction in the relationship between perceived friend social support, positive feelings about the future and loss of motivation

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## ABSTRACT

**Purpose:** University students often face psychological challenges, particularly loneliness and hopelessness, which are exacerbated by factors such as limited social interactions, economic uncertainty, lack of employment opportunities, and the increasing prevalence of online education. This study aims to investigate the relationships among perceived friend social support, loneliness, life satisfaction, and the sub-dimensions of hopelessness, which are positive feelings about the future and loss of motivation.

**Design/methodology/approach:** This cross-sectional quantitative study was conducted with 420 university students who completed a series of self-reported measures, including the Multidimensional Perceived Social Support Scale, the UCLA Loneliness Scale, the Satisfaction with Life Scale, and the Beck Hopelessness Scale.

**Findings:** The findings revealed that perceived friend social support was positively associated with life satisfaction and positive future feelings and negatively associated with loneliness and loss of motivation. Both loneliness and life satisfaction individually and serially mediated the relationships between social support and the dimensions of hopelessness.

**Conclusion:** These results highlight the crucial role of friend-based social support in alleviating loneliness and improving life satisfaction, thereby fostering optimism and preventing motivational decline among students. The findings provide valuable insights for designing interventions to enhance emotional well-being and psychological resilience among university populations.

## 1. Introduction

Higher education is an educational journey that provides university students with opportunities for intellectual exploration and emotional growth. Loneliness and hopelessness significantly impact the mental well-being and mental health of students during this process (Budakoglu et al., 2014). The experience of isolation and limited social connections leads to a sense of loneliness, which in turn becomes a psychological

issue among students. This issue has an impact on students' optimistic and pessimistic outlooks on their future (Hawkey & Cacioppo, 2010). These circumstances are intricately interconnected and influence the emotions of college students. Research in the field of psychology has recognized a link between students' mental health and their well-being (Arslan, Yıldırım, & Wong, 2022; Arslan, Yıldırım, Zangeneh, & Ak, 2022) and the feelings of loneliness that arise from inadequate social connections (Zheng et al., 2023). Nevertheless, there is a lack of

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adequate research on the impact of these relationships on students' future expectations. When students lack hope for the future, their academic motivation, success, and life satisfaction diminish (Alam & Mohanty, 2024).

Various studies have demonstrated the relationships between emotional states and adverse mental health consequences among college students, with loneliness, depression, and anxiety being particularly interrelated (Hager et al., 2022; Yang et al., 2023). Additionally, research highlights that the relationship between psychological issues and hopelessness (Sarigül et al., 2023) ultimately diminishes students' psychological resilience (Joiner et al., 1992; Moore & Diener, 2019; Nolen-Hoeksema et al., 1992). Furthermore, life satisfaction, which includes various aspects like interpersonal relationships and personal well-being, is found to be important in reducing emotional distress (Diener et al., 1985; Green & Yildirim, 2022). Recent research emphasizes the association between life satisfaction, mental health, and psychological resilience in bolstering individuals against challenges (Ng et al., 2009; Pavot & Diener, 2008; Proctor et al., 2009; Yildirim & Solmaz, 2020).

Grounded in H's (1981) social support theory, this study examines the mediating roles of life satisfaction and loneliness in the relationship between perceived friend social support and hopelessness among university students. Although social support can arise from multiple sources, including family, romantic partners, or mentors, this study centers on support derived from friendships, which plays a particularly meaningful role during emerging adulthood. Within the Turkish cultural context, traditional family and community bonds have historically shaped social support structures. Yet, with growing urbanization and a shift toward individualism, peer relationships and friendship networks have become important for university students seeking emotional support. Especially in residential or urban academic settings, students may be geographically or emotionally distant from their families and rely more heavily on peers for daily coping and emotional regulation. While some studies have found a limited association between perceived friend social support and life satisfaction when controlling for other factors (Brisson et al., 2024), we argue that in the context of emerging adulthood, peer relationships may serve a more prominent psychosocial function. The proposed model suggests that perceived social support from friends reduces feelings of hopelessness by alleviating loneliness and enhancing life satisfaction. By identifying these pathways, the study aims to inform educators and policymakers in developing targeted interventions that strengthen peer-based support systems and promote emotional well-being in academic environments.

## 2. Theoretical background and literature review

### 2.1. The theory of the research

The social support theory was developed and published by H (1981). In this study, the social support theory regarding work stress is examined, and how social support mechanisms affect individuals' ability to cope with stress is investigated. Social support theory has been developed over time with different articles and studies written later (Barrera, 1986; Cohen et al., 1985; Sarason et al., 1983; Thoits, 1986). Social support theory emphasizes the importance of social connections in helping individuals maintain their overall psychosocial health and cope with various stressful situations (Fullerton et al., 2021; Green & Elliott, 2010; Norris & Kaniasty, 1996; Şafak-Ayvazoğlu et al., 2021). The theory was developed to understand the role of social relationships in meeting people's emotional needs, coping with challenges in their lives, and improving their overall well-being (Thoits, 2011).

Social support is important for university students as they face academic and personal challenges (Yildirim et al., 2023). However, how students understand and use this support can differ depending on their cultural background. In individualistic cultures, support often focuses on personal independence and emotional encouragement (Kağıtçıbaşı,

2005). In contrast, in collectivist cultures like Turkey, support is more closely tied to long-term relationships and mutual responsibilities (Kapisız & Sieben, 2024). These cultural differences can affect how students look for, experience, and benefit from support from their friends during university life.

Social support is often evaluated in different emotional, informational, or instrumental categories (Barrera, 1986; Langford et al., 1997). Emotional support comes in the form of empathy, love, and comfort from others to help one cope with emotional difficulties (Semmer et al., 2008). Providing information is the support given to a person through advice, education, or guidance about their problems or difficulties. Instrumental support is related to financial support, physical assistance, or access to tangible resources (Shakespeare-Finch & Obst, 2011). Social support involves both received and perceived support (J. Wang et al., 2018). This study focuses on perceived social support, which refers to the belief that one is valued and cared for by others, fostering confidence in receiving help during difficult times and satisfaction with social relationships (Ardahan, 2010).

### 2.2. Literature review and hypotheses

The study of the connections between how individuals perceive social support from their friends and their experience of loneliness is an important field of research. It helps us understand how people interact with their social surroundings and the impact of these interactions on their psychological and social well-being. Perceived friend social support refers to the belief that an individual receives emotional, informational, or instrumental support from others in their surroundings. Many universities have started friend mentoring programs because they see the positive effects of friend support on students. In this sense, friend mentoring in universities is considered a highly effective intervention to ensure the success and retention of students who are at risk or in need of support (Terrion & Leonard, 2007). This assistance can play a pivotal role in an individual's ability to handle challenges, fulfil emotional requirements, and improve their overall state of being.

For college students, adjusting to a new social environment is critical in determining perceived social support. Strong social support can help students adapt to this difficult process. However, difficulties in the social environment or a lack of social support can exacerbate feelings of loneliness, particularly in students who struggle to make new friends (Stickley et al., 2013; Valenzuela et al., 2009; Vieno et al., 2007). Because loneliness is linked to psychological distress, perceived social support from friends may help to alleviate this situation (Zhang & Dong, 2022). Supportive friend relationships can help students feel less lonely, improve their psychological well-being, and boost their coping abilities (Gallardo et al., 2018). Friends' social support can help an individual develop a positive outlook and problem-solving skills by assisting them in dealing with stressful situations (Vieno et al., 2007). At the same time, having strong social connections and support can boost a person's life satisfaction. Social relationships can help with life satisfaction by allowing people to share positive emotions and create a sense of meaning and connection. Hawkey and Cacioppo (2010) argue that loneliness—defined as negative emotional states such as depression and anxiety stemming from a mismatch between desired and actual social relationships—is strongly associated with decreased life satisfaction and adversely affects students' emotional well-being in academic environments. College students frequently exhibit a prominent sense of hopelessness, which is characterized by a pessimistic perspective on the future and a lack of optimistic expectations. The relationship between loneliness and hopelessness gives rise to a potential issue whereby heightened loneliness diminishes life satisfaction and reinforces feelings of hopelessness (Moore & Diener, 2019).

Social support from friends can strengthen students' positive feelings about the future and reduce the loss of motivation (Cirik et al., 2014; Karaman & Sari, 2020; Quimby & O'Brien, 2004). Positive expectations from their friends and community can provide students with confidence

and a motivating atmosphere (Glass & Maddox, 1992; Zhong et al., 2021). It can increase students' emotional stability and contribute to their resilience in the face of difficulties they experience and to their evaluation of the future with a more optimistic perspective (Lu et al., 2018; Wang et al., 2012). Friend support can increase students' motivation for their careers and future, and life satisfaction by reducing their loneliness and supporting each other in their common goals for the future (Danielsen et al., 2009). According to this literature, the following hypothesis was written.

**H1.** Perceived friend support is significantly associated with positive feelings about the future (i) and loss of motivation (ii).

The relationships between perceived social support from friends, loneliness, life satisfaction, and hopelessness serve as a critical focal point in understanding the emotional well-being of university students. Studies indicate a positive correlation between perceived social support from friends and life satisfaction and a negative correlation with loneliness and hopelessness (Pavot & Diener, 2008; Proctor et al., 2009). Lonely individuals, especially, may have lower self-confidence and less positive emotions. Ultimately, there may be losses in their hopes for the future (Teneva & Lemay, 2020; Yoysef et al., 2018). The literature underscores the intricate relationships between loneliness, life satisfaction, and hopelessness among university students (Ng et al., 2009; Proctor et al., 2009; Qualter et al., 2015). In light of the current literature, the following hypotheses were written.

**H2.** Loneliness mediates the association of perceived friend social support with positive feelings about the future (i) and loss of motivation (ii).

**H3.** Life satisfaction mediates the association of perceived friend social support with positive feelings about the future (i) and loss of motivation (ii).

**H4.** Loneliness and life satisfaction play a serial-mediation role in the relationship of perceived friend social support with positive feelings about the future (i) and loss of motivation (ii).

### 2.3. Present study

There has been growing global concern regarding the rising prevalence of loneliness and its detrimental effects on mental health, particularly among young adults (Yildirim, 2021). The COVID-19 pandemic, in particular, has intensified feelings of social isolation, disrupted interpersonal relationships, and increased the need for supportive social connections (Çağış et al., 2023). Understanding how perceived friendship support relates to key psychological outcomes—such as loneliness, life satisfaction, and hopelessness—is therefore especially timely. In the current socio-cultural climate, where mental health challenges are becoming more visible and urgent, examining these relationships can provide a better understanding for developing effective preventive and intervention strategies tailored to the well-being of young adults.

Furthermore, friendship and social support are influenced by cultural and national backgrounds (Chentsova Dutton, 2012). How friendships are valued and how support is given and received can vary across societies. In collectivist cultures like Turkey, friendships tend to be long-lasting and deeply important. This cultural view affects how people understand and benefit from social support. While many studies on friendship and support focus on Western countries such as Europe (Garipey et al., 2016), there is limited research on these topics in non-Western contexts, particularly among Turkish university students. This study aims to fill that gap by examining the interrelationships among university students' perceived social support from friends, loneliness, life satisfaction, and hopelessness within Turkey's cultural setting.

While previous research (e.g., Budakoglu et al., 2014) has examined the direct impact of social support on hopelessness, there is limited evidence on how these effects are sequentially mediated by levels of life

satisfaction and feelings of loneliness. This study aims to clarify these relationships, providing empirical evidence on how these factors interact and influence each other in the context of university students' mental health. That is, the current study seeks to examine the serial mediating roles of life satisfaction and loneliness in the relationships between perceived friend social support, positive feelings about the future, and loss of motivation. The proposed structural model is presented in Fig. 1.

## 3. Methods

### 3.1. Participants and procedure

Although convenience sampling is often criticized due to potential biases and limitations in generalizability, we have chosen this method to efficiently collect the data within the constraints of our study. Convenience sampling allowed us to gather a substantial amount of data quickly and cost-effectively, making it a practical choice for our research aims. The inclusion criteria consisted of university students currently enrolled in a university, aged 18 years or older, with a proficient understanding of the Turkish language, who voluntarily agreed to participate in the study and who provided informed consent. Although the specific academic departments of participants were not directly recorded, the majority of the surveyed students were enrolled in programs such as child development, social work, computer programming, and electrical technology. Based on institutional data and program accessibility, it is unlikely that a significant portion of the sample consisted of psychology majors with prior exposure to the psychological scales used in the study. The study was conducted online using the Google Forms platform, engaging 420 Turkish young adults exclusively from the university community. Among these, 303 were identified as female and 117 as male, with an average age of 24.17 (SD = 6.10). The survey was disseminated among faculty members and students across various institutions. Participants provided explicit consent before completing the questionnaire. Initially, 470 participants were recruited, and due to incomplete responses, data analysis focused on 420 individuals, resulting in an overall response rate of approximately 89%. Participants had the liberty to withdraw from the survey at any point. The collected information ensured anonymity without specific personal details. On average, individuals spent 5 to 6 min completing the questionnaire. Ethical approval for this study was obtained from the Ethics Committee of Mardin Artuklu University (Approval No. 106916), and the research was conducted according to the ethical principles outlined in the Declaration of Helsinki.

### 3.2. Measures

#### 3.2.1. The multidimensional perceived social support scale

Was developed by Zimet et al. (Zimet et al., 1988) and adapted into Turkish by Eker et al. (Eker et al., 2001). The scale comprises 12 questions grouped into three subscales: friend social support, family social support, and significant other social support. Each item on the scale is rated on a Likert-type scale ranging from 1 (very strongly disagree) to 7 (very strongly agree). A high score indicates that perceived social support is high. Only the perceived friend social support dimension was used in this study. In the Turkish validity and reliability study of the scale (Eker et al., 2001), Cronbach's alpha reliability value was 0.88. In the current study, Cronbach's alpha was 0.93, and McDonald's omega was 0.92, both indicating excellent internal consistency.

#### 3.2.2. The UCLA loneliness scale

Initially introduced by Russell et al. (1978) and later shortened to an eight-item version by Hays and Dimatteo (1987) assesses individuals' subjective feelings of loneliness. This instrument gauges perceived loneliness by using a 4-point rating scale, ranging from 1 (never) to 4 (always). Its Turkish adaptation by Doğan et al. (2011) reported a

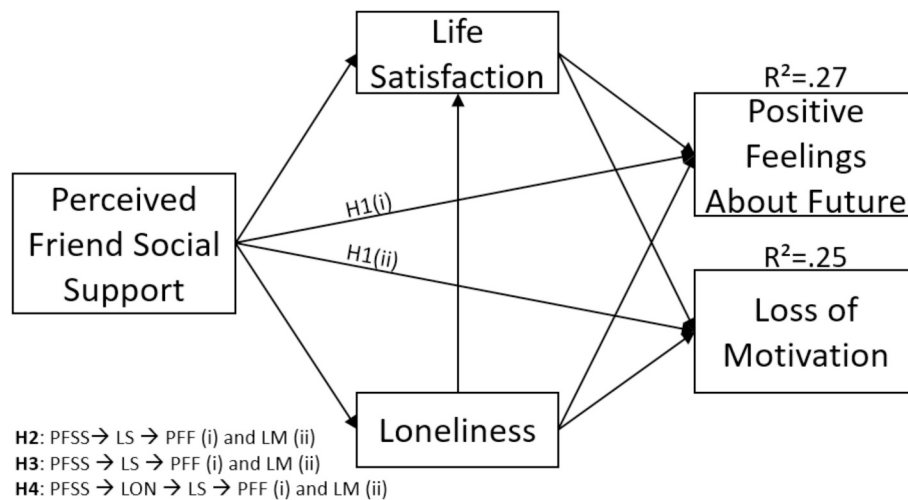


Fig. 1. Research conceptual model.

Cronbach's alpha coefficient of 0.72. This study demonstrated an internal consistency ratio of  $\alpha = 0.84$  and  $\omega = 0.79$ .

3.2.3. The satisfaction with life scale

Was designed by Diener et al. (1985) to assess an individual's overall life satisfaction, consisting of five items measuring a single factor. Respondents rate statements on a scale from 1 (strongly disagree) to 7 (strongly agree). The Turkish adaptation by Dağlı and Baysal (2016) reported Cronbach's alpha coefficients of 0.97. However, the internal consistency ratio in this current study demonstrated an  $\alpha$  of 0.88 and a McDonald's omega ( $\omega$ ) of 0.88.

3.2.4. The beck hopelessness scale

Developed by Beck et al. (1974), was used to assess pessimistic views regarding the future through 20 items. The scale encompasses positive feelings about the future, loss of motivation, and hopeless expectations about the future. For this study, we only used positive feelings about the future and loss of motivation subscales. Seber et al. (1993) conducted the adaptation of the Beck Hopelessness Scale into Turkish, reporting a Cronbach's alpha coefficient of 0.86. In this study, the internal consistency rates were  $\alpha = 0.81$  and  $\omega = 0.82$  for the "positive feelings about the future" factor, and  $\alpha = 0.72$  and  $\omega = 0.82$  for the "loss of motivation" factor.

3.3. Data analyses

The dataset compiled using MS Excel underwent SPSS statistical software analysis. Confirmatory factor analysis, essential for evaluating the model's construct validity displayed in Fig. 1, was conducted via IBM AMOS. Upon establishing the measurement model's construct validity and fit indices, a new SPSS file underwent data imputation to address any missing factors. The dataset was assessed for correlation, reliability, skewness, and kurtosis. Fit indices obtained from the measurement model guided subsequent total, direct, and indirect testing through path analysis, maintaining methodological rigor with a 95 % confidence interval and 5000 bootstrapping iterations.

4. Results

4.1. Preliminary analysis

The study's measurement model was evaluated using IBM AMOS 24 software through confirmatory factor analysis (CFA), employing the Maximum Likelihood (ML) estimation method. The initial analysis revealed that the fit indices marginally deviated from the anticipated

benchmarks. Consequently, suggested modifications were implemented based on modification indices. Specifically, error covariances were added between certain item pairs within the same latent construct that shared similar content, which improved model fit. Following the incorporation of these covariances, it was established that the model's fit indices aligned with commonly accepted criteria (e.g., GFI, TLI, NFI, IFI, CFI > 0.90, CMIN/DF < 5, RMSEA < 0.08), as proposed by Hu and Bentler (1999). Thus, the final fit indices of the measurement model were deemed acceptable, as outlined in Table 1 below. Notably, the dataset contained no missing data, so no imputation procedure was necessary.

Due to the confirmatory factor analysis establishing the fit indices for the measurement model in this study, a new dataset was derived through imputation analysis. Correlation, means, skewness, and kurtosis values about the variables, as presented in Table 2, underwent analysis. It was observed that the skewness and kurtosis values obtained to assess variable normality fell within the expected range.

The correlation analysis revealed significant associations among the study variables based on Pearson correlation coefficients. Life satisfaction was negatively correlated with both loneliness ( $r = -0.297, p < 0.01$ ) and loss of motivation ( $r = -0.418, p < 0.01$ ), and positively correlated with positive feelings about the future ( $r = 0.378, p < 0.01$ ) and perceived friend support ( $r = 0.455, p < 0.01$ ). Loneliness showed a positive correlation with loss of motivation ( $r = 0.416, p < 0.01$ ) and negative correlations with positive feelings about the future ( $r = -0.525, p < 0.01$ ) and perceived friend support ( $r = -0.349, p < 0.01$ ). Moreover, positive feelings about the future were positively correlated with perceived friend support ( $r = 0.223, p < 0.01$ ), while loss of motivation was negatively correlated with it ( $r = -0.404, p < 0.01$ ).

4.2. Direct and indirect path analyses

Path analyses were conducted after confirming that the model met

Table 1 Measurement model and SEM path analysis values.

Measure	Measurement Values	Path Values	Cut-off Criteria
CMIN/DF	1.59	1.66	<5
CFI	0.97	0.97	>0.90
SRMR	0.05	0.06	<0.08
RMSEA	0.04	0.04	<0.08
GFI	0.93	0.92	>0.90
IFI	0.97	0.97	>0.90
AGFI	0.91	0.90	>0.90
TLI	0.97	0.96	>0.90

**Table 2**  
Correlations, means, Std. deviations, skewness, kurtosis.

No.	Variables	1	2	3	4	5
1	Life Satisfaction	1				
2	Loneliness	-0.297**	1			
3	Positive Feelings about the Future	0.378**	-0.525**	1		
4	Loss of Motivation	-0.418**	0.416**	-0.508**	1	
5	Perceived Friend Social Support	0.455**	-0.349**	0.223**	-0.404**	1
	Mean	3.03	1.16	1.00	0.67	3.77
	Standard Deviation	1.203	0.561	0.232	0.208	1.380
	Skewness	-0.131	0.652	-0.895	0.835	-0.960
	Kurtosis	-1.080	-0.306	-0.556	-0.573	-0.165

\*\*  $p < 0.01$ .

the required fit indices to examine the direct, total, and indirect effects. The results of the structural equation modeling (SEM) revealed that perceived friend social support decreased the loss of motivation ( $\beta = -0.187$ ;  $p < 0.01$ ). Indirect analyses revealed a significant mediating role of loneliness in the association between perceived friend social support and both positive feelings about the future ( $\beta = 0.133$ ;  $p < 0.001$ ; 95 % CI [0.015; 0.037]) and loss of motivation ( $\beta = -0.082$ ;  $p < 0.001$ ; 95 % CI [-0.025; -0.007]). Additionally, life satisfaction emerged as a significant mediator in the relationship between perceived friend social support and both positive feelings about the future ( $\beta = 0.092$ ;  $p < 0.001$ ; 95 % CI [0.009; 0.026]) and loss of motivation ( $\beta = -0.086$ ;  $p < 0.01$ ; 95 % CI [-0.023; -0.007]). Moreover, loneliness and life satisfaction played a serial mediation role in the connection between perceived friend social support and the outcomes of positive feelings about the future ( $\beta = 0.045$ ;  $p < 0.01$ ; 95 % CI [0.001; 0.004]) and loss of motivation ( $\beta = 0.045$ ;  $p < 0.01$ ; 95 % CI [-0.004; -0.001]). The strongest indirect effect was observed in the pathway from friend support to positive future feelings through loneliness ( $\beta = 0.133$ ),

**Table 3**  
Direct and indirect SEM analyses.

Direct Paths		$\beta$	B	S.E.	p
PFSS	→ Loneliness	-0,32	-0,136	0,024	***
PFSS	→ LS	0,377	0,34	0,05	***
Loneliness	→ LS	-0,142	-0,3	0,116	0,009
PFSS	→ PFF	-0,036	-0,006	0,01	0,521
PFSS	→ LM	-0,187	-0,03	0,009	0,001
Loneliness	→ LM	0,257	0,098	0,023	***
Loneliness	→ PFF	-0,416	-0,174	0,028	***
LS	→ PFF	0,245	0,048	0,012	***
LS	→ LM	-0,227	-0,041	0,011	***

Total Effect	$\beta$	Lower	Upper	S.E.	P-Value	p
PFSS → PFF	0,200	0,087	0,307	0,056	0,001	***
PFSS → LM	-0,366	-0,469	-0,256	0,054	0,001	***

Indirect Effects	$\beta$	B	Lower	Upper	P-Value	p
PFSS → Loneliness → LS → PFF	0,045	0,002	0,001	0,004	0,006	**
PFSS → Loneliness → LS → LM	0,045	-0,002	-0,004	-0,001	0,007	**
PFSS → Loneliness → LM	-0,082	-0,013	-0,025	-0,007	0,001	***
PFSS → Loneliness → PFF	0,133	0,024	0,015	0,037	0,001	***
PFSS → Life satisfaction → PFF	0,092	0,016	0,009	0,026	0,001	***
PFSS → Life satisfaction → LM	-0,086	-0,014	-0,023	-0,007	0,002	**

Notes.  $\beta$ : Standardized Estimate; B: Unstandardized Estimate; S.E.: Standard Error; PFSS: Perceived Friend Social Support; PFF: Positive Feelings about the Future; LM: Loss of Motivation; LS: Life Satisfaction.

suggesting a moderate effect size. As shown in Table 3, all six mediation effects were statistically significant, as indicated by confidence intervals that did not include zero. While all indirect effects were statistically significant, presenting standardized estimates and confidence intervals allows for a more meaningful interpretation beyond significance levels alone.

### 5. Discussion

The present study examined the relationships between perceived friend social support, loneliness, life satisfaction, and hopelessness in the college student population is supported by existing literature and confirms important findings predicting hopelessness (Hawkey & Cacioppo, 2010; Qualter et al., 2015). Lack of social support and loneliness emerged as crucial factors that significantly predicted decreased life satisfaction and undermined positive expectations for the future, while fostering feelings of loss of motivation. This is consistent with previous studies highlighting that loneliness and inadequate perceived social support are widespread issues that negatively affect emotional well-being and both physical and mental health across various demographic groups (Bruss et al., 2024; Wärnberg et al., 2021). Furthermore, our research demonstrates the diverse impacts of insufficient perceived social support from friends and feelings of loneliness on college students' overall satisfaction with life (Hirsch & Conner, 2006; Lasgaard et al., 2011). Inadequate social support from friends increases feelings of loneliness and has detrimental effects on students' satisfaction, influences their perception of the future, fosters a sense of hopelessness, diminishes motivation, and significantly contributes to the complexity of psychological distress in this particular demographic.

Before conducting the mediation analysis, the relationships between the independent and dependent variables were examined, and the results were reported as total effects. Our first hypothesis (H1), which posited that perceived friend social support would be positively associated with positive feelings about the future and negatively associated with loss of motivation, was fully supported by the total effect findings. In the correlation analysis, perceived friend social support demonstrated a strong positive association with future-oriented optimism and a negative association with loss of motivation. These findings highlight the crucial role of peer relationships in shaping students' psychological outlook, particularly during transitional periods, such as university life. The presence of supportive friendships may foster a sense of belonging, security, and encouragement, which helps students stay motivated and maintain a hopeful perspective on the future. Previous research has similarly emphasized the impact of friend support on enhancing future expectations and reducing motivational decline (Cırık et al., 2014; Karaman & Sarı, 2020; Lu et al., 2018; Quimby & O'Brien, 2004; Wang et al., 2012). Our study adds to this body of knowledge by highlighting the influence of perceived friend support in a university student population, suggesting that even subtle perceptions of being emotionally supported by peers can play a crucial role in sustaining motivation and optimism in the face of academic and personal challenges (Danielsen et al., 2009; Legault et al., 2006; Shanti et al., 2021).

The second hypothesis (H2), which proposed that loneliness mediates the relationship between perceived friend social support and outcomes, including positive feelings about the future and loss of motivation, was fully supported. For the mediation to occur, loneliness, as a mediating variable, had significant relationships with the independent variable, perceived friend social support, and the dependent variable, positive feelings for the future and loss of motivation. This finding highlights the psychological pathways through which peer-based social connections can shape individuals' motivational and future-oriented dispositions. In particular, the inverse relationship between perceived friend support and loneliness aligns with existing literature (Gautam et al., 2024; Zhang & Dong, 2022). However, our results deepen this understanding by illustrating how loneliness serves as a conduit through which peer support exerts its influence on motivational states. Loneliness, characterized by feelings of social disconnection, is often linked to decreased self-esteem, altered goal orientation, and increased pessimism (Ng et al., 2009; Proctor et al., 2009; Qualter et al., 2015). These emotional states not only reduce one's ability to engage in proactive thinking but also limit the cognitive resources needed to construct a hopeful outlook. Our study suggests that perceived emotional closeness with friends can act as a buffer against these adverse effects, supporting the idea that even subjective perceptions of peer support can mitigate loneliness and, in turn, foster motivation and future-directed optimism in young adults.

The third hypothesis (H3), which proposed that life satisfaction mediates the relationship between perceived friend social support and both positive feelings about the future and loss of motivation, was fully supported. The findings revealed that perceived support from friends was positively associated with life satisfaction, which in turn predicted greater future optimism and lower motivational decline. These results are consistent with prior studies highlighting the pivotal role of life satisfaction in facilitating adaptive psychological outcomes (Glass & Maddox, 1992; Pavot & Diener, 2008; Proctor et al., 2009; Zhong et al., 2021). However, our study advances this literature by emphasizing how life satisfaction serves as a dynamic psychological resource that bridges the emotional benefits of peer support with future-oriented motivational states. From a theoretical perspective, life satisfaction can be conceptualized as a stable indicator of well-being that reflects cumulative positive experiences and effective emotion regulation. In this context, friendships not only offer immediate emotional comfort but also contribute to broader feelings of life contentment. This sense of fulfillment, in turn, fosters a more optimistic appraisal of one's future and promotes goal-directed behavior. For university students navigating uncertainty and academic pressures, higher life satisfaction may strengthen their sense of agency and reduce motivational fatigue. Our findings suggest that enhancing perceived peer support may indirectly foster a psychological environment in which individuals are better equipped to envision and pursue their future aspirations with clarity and confidence.

The final hypothesis (H4), which tested the serial mediating role of loneliness and life satisfaction in the relationship between perceived friend social support and both positive feelings about the future and loss of motivation, was fully supported. This comprehensive model integrates the partial mechanisms explored in the previous hypotheses, providing a more holistic understanding of how peer relationships influence psychological functioning. The sequential pathway revealed that perceived social support from friends first alleviates loneliness, which subsequently enhances life satisfaction, ultimately leading to greater optimism about the future and reduced motivational decline. This finding highlights the complex and dynamic nature of psychological adaptation, where social connectedness serves as an initial protective factor that fosters broader emotional and cognitive benefits. Rather than viewing support, loneliness, and satisfaction as isolated variables, the model positions them as interdependent processes that shape future-directed thinking. This is particularly salient for university students, for whom peer relationships constitute a major source of social and

emotional capital.

As a result, using a multiple mediation model, the present study advances the literature by elucidating how perceived friend social support shapes university students' positive feelings about the future and their loss of motivation through the mediating roles of loneliness and life satisfaction. Anchored in social support theory, the findings underscore the crucial role of peer relationships in shaping students' emotional well-being and future-oriented psychological functioning during emerging adulthood.

### 5.1. Limitations

While this study provides important evidence regarding the associations between perceived friend social support, loneliness, life satisfaction, and hopelessness, some limitations need to be considered. Since the research was conducted online, participants were not interviewed face-to-face, and their thoughts and reactions could not be determined. The use of self-reported measures, a cross-sectional design, and a lack of incorporation of potential confounding variables may limit a balanced interpretation of the findings and causal relationships among the variables. In the context of our study, it is challenging to determine causality between variables in either direction. Therefore, future research focusing on longitudinal or experimental studies will be necessary to confirm definitive causal relationships among the variables. In this study, there is a potential for common method bias, which might exaggerate the relationships between variables. To reduce this risk, incorporating objective measures or employing multiple data collection methods could be beneficial. For future research, different methodologies can be used to increase the robustness of possible results. Finally, the findings of the study have limited generalizability due to the use of a convenience sample of university students recruited online, which may not be representative of the broader student population. Hence, it is important for future research to conduct similar studies with more diverse samples that include students from various educational backgrounds and institutions and implement randomized sampling techniques to enhance the representativeness of the sample.

### 5.2. Conclusions and implications

The study sheds light on the associations between friend social support, loneliness, life satisfaction, and hopelessness in university students. Friend social support and loneliness emerged as strong predictors affecting current life satisfaction and future expectations, while loneliness and life satisfaction played an important role in mediating these effects. Understanding these dynamics offers an opportunity for targeted interventions aimed at increasing friend social support and life satisfaction to alleviate the negative psychological consequences of loneliness and hopelessness in current demographics.

The results of this study are very important for both research and practical applications. Addressing the negative consequences of loneliness requires targeted interventions that will increase college students' life satisfaction. Strategies that focus on strengthening social connections and increasing life satisfaction are crucial. Educators and policymakers need to take into consideration practices and policies that will encourage friend-social support, which stands out with its positive contribution to other factors in the study, in school, and in university environments. Failure to enhance perceived friend social support, which can boost hope by increasing life satisfaction and reducing loneliness, may negatively impact educational outcomes like student achievement (Wardat et al., 2023) and motivation (Tashtoush et al., 2023). This lack of support can also affect future work-related outcomes, such as job satisfaction, when students eventually begin careers in the education sector (Zakariya, 2022).

In addition to the statistical significance of the findings, the practical implications of the observed effect sizes should also be noted. Even small to moderate effects—such as the impact of perceived friend social

support on loneliness and life satisfaction—can translate into meaningful improvements in students' emotional well-being and academic motivation. These results suggest that peer support initiatives, even when simple and low-cost, may play a critical role in enhancing students' psychological resilience. Therefore, university administrators and mental health professionals should consider integrating peer-based programs into their support systems to promote a more connected and hopeful student environment.

### CRedit authorship contribution statement

**Yavuz Aslan:** Writing – original draft, Resources, Project administration, Methodology, Investigation, Data curation, Conceptualization. **Orhan Koçak:** Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Methodology, Conceptualization. **Aysel Basmacı Kaya:** Writing – original draft. **Abdulmohsen Mohammed Abdullah Alkhalayfi:** Writing – review & editing, Funding acquisition. **Juan Gómez-Salgado:** Writing – review & editing, Funding acquisition. **Murat Yıldırım:** Writing – review & editing, Writing – original draft, Validation, Supervision, Resources.

### Informed consent

Consent was obtained from all participants included in the study.

### Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study protocol was approved by the Ethical Committee of Mardin Artuklu University (reference number: E-79906804-020-106,916).

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### Declaration of competing interest

The authors declared no conflicts of interest with respect to the research, authorship, and publication of this article.

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### Data availability

The data supporting this study's findings are available from the corresponding author upon reasonable request.

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