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SATISFACTION: A MEDIATION MODEL**

YAŞAM DOYUMUNDA TEMEL PSİKOLOJİK
İHTİYAÇLAR VE BÜTÜNLÜK DUYGUSUNUN
ROLÜ: BİR ARACILIK MODELİ

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Hacı Arif DOĞANÜLKÜ¹, Dilek MURAZ²

Keywords:

Sense of Coherence, Self-Determination Theory, Psychological Needs, Life Satisfaction.

Anahtar Kelimeler:

Bütünlük Duygusu, Öz-Belirleme Teorisi, Psikolojik İhtiyaçlar, Yaşam Doymu.

ABSTRACT

Life satisfaction is an important indicator of mental health. Therefore, research aimed at identifying the variables and models related to life satisfaction is essential for informing interventions that seek to enhance life satisfaction. The relationship between basic psychological needs and life satisfaction is well-established in the literature. However, the role of the sense of coherence in this relationship has been supported only by theoretical references and has not been empirically tested. The present study, which aims to fill this gap, examines the mediating role of the sense of coherence in the relationship between psychological needs and life satisfaction. The participants are Turkish university students. A total of 354 students participated in the study, of whom 212 were female and 142 were male. Participants' ages ranged from 18 to 37, with an average age of 21.03. "The Balanced Measure of Psychological Needs Scale", "the Sense of Coherence Scale", and "the Satisfaction with Life Scale" were used as measurement tools. Pearson correlation analysis was employed for examining relationships between variables, while PROCESS Macro Model 4 was used for mediation analysis. Significant relationships were found among all variables. The findings revealed that the sense of coherence mediates the relationship between the satisfaction of psychological needs and life satisfaction.

ÖZ

Yaşam doymu önemli bir ruh sağlığı göstergesidir. Bu nedenle yaşam doymuna ilişkin değişkenleri ve modelleri belirlemeye yönelik araştırmalar, yaşam doymunu artırmaya yönelik çalışmalara ışık tutması açısından önemlidir. Temel psikolojik ihtiyaçlar ile yaşam doymu arasındaki ilişki alan yazında iyi bilinmektedir. Ancak bütünlük duygusunun bu ilişkideki rolü yalnızca teorik referanslarla desteklenmiş ve ampirik olarak test edilmemiştir. Bu boşluğu doldurmayı amaçlayan bu çalışma, psikolojik ihtiyaçlar ile yaşam doymu arasındaki ilişkide bütünlük duygusunun aracılık rolünü incelemektedir. Katılımcılar Türk üniversite öğrencileridir. Araştırmaya 212'si kadın (%59,9) ve 142'si erkek (%40,1) olmak üzere toplam 354 öğrenci katılmıştır. Katılımcıların yaşları 18 ile 37 arasında değişmekte olup yaş ortalaması 21,03'tür. Ölçme aracı olarak "Psikolojik İhtiyaç Doymunda Denge Ölçeği", "Bütünlük Duygusu Ölçeği" ve "Yaşam Doymu Ölçeği" kullanılmıştır. İlişki analizi için Pearson korelasyon analizi, aracılık analizi için PROCESS Macro Model 4 kullanılmıştır. Tüm değişkenler arasında anlamlı ilişkiler bulunmuştur. Bulgular, psikolojik ihtiyaçların tatmini ile yaşam doymu arasındaki ilişkiye bütünlük duygusunun aracılık ettiğini ortaya koymuştur.

¹ Assist, Prof., Çukurova University, Faculty of Education, adoganulku@cu.edu.tr, 0000-0003-2055-7511

² Master's Student, Çukurova University, Faculty of Education, dilekmuraz@gmail.com, 0009-0009-5496-1492

Alıntılanmak için/Cite as:
Doğanülkü H. A. ve Muraz D. (2025) The Role Of Basic Psychological Needs And Sense Of Coherence In Life Satisfaction: A Mediation Model, Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 34 (2), 1200-1216

INTRODUCTION

Positive psychology emerged as an antithesis to the traditional psychological perspective, which focuses on pathology, and has facilitated a more holistic approach to human psychology by emphasizing positive phenomena. In positive psychology research, elements aimed at strengthening mental health frequently appear (Hefferon & Boniwell, 2011; Seligman, 2002; Seligman et al., 2005). In this context, life satisfaction is considered one of the most important components of positive psychology and serves as an indicator of subjective well-being (Diener et al., 2002; Eid & Larsen, 2008; Karataş et al., 2021).

Seligman, in explaining life satisfaction, focused on the predictive roles of pleasure, meaning (eudaimonia), and flow. He empirically tested this view, emphasizing the importance of achieving a satisfying life through balance and demonstrated the independent predictive value of these three factors (Peterson et al., 2005). However, there are other perspectives in the literature that address the concept of life satisfaction more comprehensively than Seligman's explanation. Diener (1984) defines life satisfaction as an individual's cognitive evaluation of their life, considering it a component of subjective well-being. Moreover, it is argued that life satisfaction is not merely the arithmetic mean of an individual's happiness but rather a general assessment of their life (Diener et al., 2002). In short, life satisfaction is a general (Ayhan & Özel, 2020) and subjective (Deneme, 2021; Karataş & Tagay, 2021) evaluation of how an individual perceives the gap between what they have and their expectations. One of the key variables influencing this subjective evaluation is the extent to which an individual's psychological needs are fulfilled.

Psychological needs are always open to additions (Vansteenkiste et al., 2020); however, in Self-Determination Theory (SDT), they are defined by three core elements: “autonomy, competence, and relatedness” (Ryan & Deci, 2017). Autonomy refers to the need to regulate one's experiences and actions in alignment with inner values and interests, while competence represents the need to be effective and successful. Relatedness is defined as the need to feel socially connected. These needs are considered fundamental and universal for human

development, integrity, and well-being within SDT (Guay, 2022). Moreover, the universality of these psychological needs was empirically validated in a study involving university students from four countries (Chen et al., 2015).

Experiences of psychological needs provide individuals with guidance for making healthy choices and building a satisfying life (Vansteenkiste et al., 2023). BPN primarily aims to explain well-being outcomes related to the satisfaction of autonomy, competence, and relatedness needs (Deci & Ryan, 2000; Deci & Ryan, 2012). This theoretical framework has been followed by studies that seek to provide relevant empirical evidence (e.g., Reis et al., 2000). According to a common classification, subjective well-being is considered a component of overall well-being (Linley et al., 2009). It is also essential to note that life satisfaction is an element of subjective well-being (Diener et al., 2002). In Self-Determination Theory, the fulfillment of basic psychological needs is described as an integrative process that supports internal coherence. In the literature, the sense of internal integration is commonly examined within the framework of the concept of “sense of coherence”.

Sense of Coherence (SOC) is a concept developed from Antonovsky's salutogenic model, which explains an individual's capacity to cope with stressful situations and refers to their ability to perceive the world as comprehensible, manageable, and meaningful (Braun-Lewensohn et al., 2021). In the salutogenic model, the necessity of SOC for humans is explained by the assumption that culture and historical context create psychosocial stressors for individuals (Mittelmark & Bauer, 2022). According to this model, SOC consists of three components: comprehensibility, manageability, and meaningfulness. Comprehensibility refers to an individual's perception of their internal and external environments as logical, consistent, and predictable; manageability refers to the belief that they have the necessary resources to cope with situations they encounter; and meaningfulness refers to the motivation derived from viewing life as emotionally meaningful and important (Braun-Lewensohn et al., 2021). SOC is known to play an important role in enhancing resilience against distress factors (Schäfer et al., 2020). Many theorists agree that subjective well-being, including

life satisfaction, is influenced by life conditions (Diener et al., 2002).

SOC is also considered an important construct within the context of BPN. The salutogenic model theoretically posits that the level of SOC serves as a strengthening factor in coping with challenges (Kravetz et al., 1993). Ryan (1995) highlighted the interaction between psychological needs and contextual support systems such as SOC, and later, Deci and Ryan (2000; 2008) conceptualized the satisfaction of these needs as an integrative process for the self. In their 2017 study, they reported that individuals whose psychological needs were met exhibited higher levels of SOC. Similarly, the salutogenic approach views BPN as a natural and intrinsic tendency essential for self-development (Mittelmark & Bauer, 2022). Supporting this view, a study by Idan and Margalit (2014) found a positive and significant relationship between the satisfaction of psychological needs and SOC levels. These theoretical explanations and initial empirical findings suggest that the fulfillment of basic psychological needs may enable individuals to evaluate their lives as more meaningful, manageable, and comprehensible—thus predicting higher levels of SOC. This sense of internal coherence is also closely associated with indicators of subjective well-being, such as life satisfaction. SDT posits that need satisfaction is a process that enhances internal consistency, and life satisfaction is regarded as a cognitive outcome of this process. Accordingly, SOC—which reflects perceiving life as comprehensible, manageable, and meaningful—may emerge from the fulfillment of psychological needs and function as a mechanism that supports life satisfaction. The theoretical framework thus proposes a dual pathway: a direct effect of BPN on life satisfaction, and an indirect effect mediated by SOC.

Empirical studies on the topic indicate that research based on Self-Determination Theory (SDT) highlights not only the positive outcomes of need satisfaction but also the negative consequences of need frustration (Ryan & Deci, 2019; Vansteenkiste et al., 2020). The three basic needs identified in SDT are critical for human motivation and well-being: their fulfillment is strongly linked to vitality and well-being, while their obstruction can lead to motivational depletion (Deci & Ryan, 2017). Persistent

frustration of these needs may lead to various psychological issues (Formosa et al., 2022). Furthermore, Cantarero et al. (2021), through two consecutive studies, demonstrated the importance of satisfying basic psychological needs. Their first study revealed that BPN is associated with well-being, while their second study reported that an intervention aimed at increasing BPN led to improvements in mental well-being and reductions in perceived stress. Collectively, these findings emphasize that fulfilling BPN consistently reduces stress levels and enhances well-being, as shown in the literature. Additionally, empirical evidence supports the three main postulates of the theory (Sheldon et al., 2001), showing that the failure to satisfy these needs generates a desire to fulfill unmet experiences (Sheldon & Gunz, 2009). There is also empirical evidence indicating how the satisfaction of basic psychological needs predicts motivational orientation variables (internal and external motivation sources) within SDT (Alamer, 2022). Moreover, frustration related to the fulfillment of individuals' psychological needs has been found to correlate with perceived stress levels (Neufeld et al., 2020).

In summary, theoretically, the satisfaction of BPN is understood to predict individuals' subjective well-being and, consequently, their life satisfaction. Indeed, a relevant study examining the relationship between psychological needs and life satisfaction found that satisfying autonomy, relatedness, and competence needs positively affects life satisfaction (Šakan et al., 2020). Another study reported that the positive relationship between life goals and life satisfaction is mediated by the satisfaction of the competence need, while the indirect effect of extrinsic goals on life satisfaction is significant through the autonomy need (Olčar et al., 2019). Additionally, a study reported that the satisfaction of all psychological needs positively influences leisure satisfaction, with autonomy and relatedness satisfaction increasing job satisfaction; both satisfaction areas (leisure and job) positively affect overall life satisfaction (Walker & Kono, 2018). SDT posits that the satisfaction of autonomy, competence, and relatedness is essential for psychological integrity, and well-being. Life satisfaction is therefore expected to be positively influenced by need satisfaction. In line with these theoretical knowledge and findings, other studies have focused on

the total BPN score and reported that BPN satisfaction increases life satisfaction (Butkovic et al., 2020; Okur & Özekes, 2020). A more complex explanation is offered by a study that revealed the cross-sectional and longitudinal connections between job satisfaction and life satisfaction are mediated by the satisfaction of psychological needs in the workplace (Unanue et al., 2017). Based on theoretical explanations and past research findings, it can be hypothesized that university students' psychological needs may predict their life satisfaction. Therefore, the following hypothesis has been developed for testing:

H_1 : Psychological needs are significant and positive predictors of life satisfaction.

In addition to the direct effect of BPN on life satisfaction, previous research has also examined the role of SOC in this relationship. Empirical evidence suggests that SOC is significantly associated with both BPN and life satisfaction. Several studies have also shown that as perceived stress increases in individuals, the level of meaning in life decreases, which in turn predicts low levels of SOC (Güngör, 2022). Additionally, SOC is known to contribute to individuals' psychological resilience (Braun-Lewensohn et al., 2021). Similarly, studies in the literature report that SOC is positively correlated with self-differentiation and negatively correlated with alexithymia (Yıldız, 2020), anxiety, and depression (Li et al., 2021). Furthermore, SOC positively predicts self-esteem (Günaydın & Uzdil, 2023), self-satisfaction (Çeçen & Mert, 2023), optimism, and psychological well-being (Yıldız & Önder, 2021), while negatively predicting psychological distress (Çeçen & Mert, 2023), anxiety, depression (Greco et al., 2022), and emotion- and avoidance-focused stress coping styles (Konaszewski et al., 2021).

Experimental research on SOC is also present in the literature. Some studies report that therapeutic sessions based on the salutogenic approach contribute to adaptation and resilience (Aci & Kutlu, 2022) and that interventions for burnout increase individuals' SOC levels over time (Kähönen et al., 2012). These findings provide empirical evidence that SOC levels in individuals can be increased (Kähönen et al., 2012). Additionally, an experimental study shows that individuals with high SOC levels perform better

cognitively under stress compared to those with lower levels (Kimhi, 2015).

Empirical findings show that SOC mediates the effect of stress on life satisfaction, such that high levels of stress reduce SOC and, consequently, life satisfaction (Dymecka et al., 2022). Another study on the topic found that SOC predicts life satisfaction when age and individual stressors are controlled for (Moksnes & Haugan, 2015). Additionally, a study in the literature reports that SOC directly predicts life satisfaction (Dymecka et al., 2021). A study by Langeland and colleagues demonstrates that individuals with a high level of SOC are able to enhance their life satisfaction despite experiencing ongoing psychological symptoms (Langeland et al., 2007). In parallel, another study has demonstrated that SOC is a strong predictor of life satisfaction (Moksnes et al., 2013). Taken together, these findings provide strong evidence that SOC is a significant predictor of life satisfaction.

As seen from the statements above, SOC is a variable related to both BPN and life satisfaction. Moreover, SDT conceptualizes need satisfaction as an integrative process, suggesting that it fosters internal coherence. SOC, defined as one's perception of life as comprehensible, manageable, and meaningful, can thus emerge from fulfilled psychological needs and function as a resilience-promoting mechanism that further contributes to life satisfaction. Both theoretical frameworks and research findings suggest that BPN could be a predictor of SOC. Additionally, SOC is viewed as an important predictor of life satisfaction, both theoretically and empirically. In other words, SOC can be considered an outcome variable in the context of BPN and a predictor variable in terms of life satisfaction. Thus, SOC may mediate the relationship between BPN and life satisfaction. In this context, the following hypothesis has been developed for testing:

H_2 : SOC has a mediating role in the relationship between psychological needs and life satisfaction.

Life satisfaction is an important variable because of its close relationship with individuals' positive coping styles (Ding et al., 2024; Erduran-Tekin, 2024), their ability to regulate emotions (Graça & Brandão, 2024), and emotional intelligence (Kartol et al., 2024). When examining

relational studies on life satisfaction, it has been found that psychological resilience (Gündoğan, 2021), finding meaning in life (Arslan et al., 2020; Karataş et al., 2021), social support (Papi & Cheraghi, 2021), and mindfulness (Arı et al., 2020) positively predict life satisfaction. In contrast, psychological distress (Duong, 2021), separation, and unemployment negatively predict life satisfaction (Krämer et al., 2023). Additionally, high levels of life satisfaction are known to be associated with low levels of depression (Beutel et al., 2010; Koivumaa-Honkanen et al., 2004; Yalçın et al., 2022), low levels of anxiety (Beutel et al., 2010; Tahoon, 2021), and low levels of stress (Holinka, 2015; Yalçın et al., 2022). Furthermore, life satisfaction has been positively correlated with mindfulness (Yalçın et al., 2022), a meaningful life, psychological flexibility (Arslan & Allen, 2022), and resilience (Karataş & Tagay, 2021; Yalçın et al., 2022). Moreover, individuals who report higher levels of life satisfaction also tend to have higher levels of hope (Karataş et al., 2021).

In addition, life satisfaction has been shown to reduce work-family conflict (Karaköse et al., 2021). Experimental studies on life satisfaction have demonstrated that mindfulness meditations significantly increase life satisfaction and that life satisfaction can significantly improve within a two-month period (Gupta & Verma, 2020). Another experimental study found that life satisfaction can be influenced by reflecting on both positive and negative life events (Gärling & Gamble, 2012). Similarly, a longitudinal experimental study reported that asking individuals to report their satisfaction in specific areas before reporting their overall life satisfaction subsequently increased their overall life satisfaction averages (Angelini et al., 2017).

Given all this information, it is clear that researchers have extensively explored the relationship between life satisfaction and various variables. When these studies are considered together, it becomes evident that an increase in life satisfaction contributes to overall psychological improvement. Therefore, interventions and studies aimed at increasing life satisfaction should be conducted to promote individuals' psychological wellness. At this point, it is essential to identify the variables associated with individuals' life satisfaction. This way, guidelines can be

created for research aimed at enhancing life satisfaction.

Positive psychology emphasizes the importance of life satisfaction (Snyder & Lopez, 2001). Life satisfaction, along with individuals' evaluations of their emotions (both positive and negative), forms their subjective well-being (Harrington, 2013). It is also the most complex component of subjective well-being (Eid & Larsen, 2008) and is considered the most stable measure among its components (Eid & Larsen, 2008). When examining the benefits of life satisfaction for individuals, high life satisfaction is found to be associated with lower levels of depression, anxiety, and stress (Yalçın et al., 2022) and is positively correlated with a meaningful life, psychological flexibility (Arslan & Allen, 2022), hope (Karataş et al., 2021), and resilience (Karataş & Tagay, 2021; Yalçın et al., 2022). Investigating individuals' life satisfaction to promote these benefits is one of the motivations behind this study.

Another important aspect of life satisfaction is that its level and stability are influenced by life events (Eid & Larsen, 2008). One of the factors affecting life satisfaction is the fulfillment of BPN (Butkovic et al., 2020; Walker & Kono, 2018). A study examining the BPN levels of university students found that these levels vary across the subdimensions of the concept and certain demographic variables (age and gender) (Aydın & Kahraman, 2020). A notable finding from this study is that students, on average, score highest in relatedness, followed by competence, and then autonomy. In another study conducted with university students, self-esteem and social support were found to significantly predict the fulfillment of BPN, which in turn significantly predicts well-being and resilience (Kardaş & Yalçın, 2021). These findings provide insights into the needs of the university student population discussed in this study but offer limited information on the relationship between BPN and life satisfaction among university students. It has been concluded that further enrichment of the national literature on this topic is needed.

Additionally, the ultimate goal of life satisfaction research is centered on program planning and evaluation (Eid & Larsen, 2008). A second motivation for this study is the expectation that its findings will serve as a reference for necessary interventions. This study is expected to contribute current empirical knowledge to the development

of SDT-based life satisfaction interventions. In this context, university students emerge as an important population to reach, as they are in a significant transitional period in their lives, experiencing processes such as identity exploration, adapting to changing life circumstances, and feeling in between adolescence and adulthood (Arnett, 2023). Enhancing life satisfaction in this age group can support their resilience (Karataş & Tagay, 2021; Yalçın et al., 2022) and help them navigate emerging adulthood in a healthy manner. Conversely, the prevalence of mental disorders during this period (Arnett, 2007) underscores the need for preventive interventions.

Another issue is the lack of recent empirical studies testing theoretical explanations regarding the relationship between BPN and SOC (e.g., Idan & Margalit, 2014). Consequently, evidence-based knowledge on SOC's mediation role in the prediction of life satisfaction by BPN is limited. In the literature, studies that empirically present original information within mediation models are considered to contribute empirical knowledge to the field (Adu & Miles, 2023). In this regard, the present study contributes to the empirical literature by constructing a unique mediation model related to the factors influencing university students' life satisfaction. This study aims to assess university students' current levels of BPN, SOC, and life satisfaction and to add evidence-based knowledge to the literature by investigating the impact of BPN and SOC on life satisfaction. The hypothesized model is shown in Figure 1.

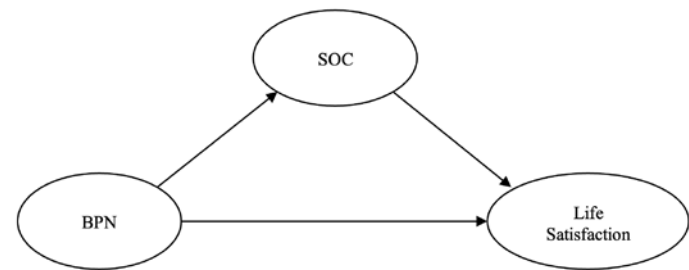


Figure 1. The Hypothesized Model

METHOD

This study is a mediation study designed within a relational model based on a quantitative paradigm. The predictor variable is psychological needs, the predicted variable is life satisfaction, and the mediating variable is the sense of coherence.

Participants

The study was conducted at a university in the Eastern Mediterranean region of Turkey, with university students included as participants. Participants were selected using the convenience sampling method. A total of 354 students participated in the study, of whom 212 were female (59.9%) and 142 were male (40.1%). Participants' ages ranged from 18 to 37, with an average age of 21.03. Among the students, 76 (21.5%) were freshmen, 75 (21.2%) were sophomores, 72 (20.3%) were juniors, and 131 (37%) were seniors.

Measures

Balanced Measure of Psychological Needs Scale (BMPNS): The BMPNS was developed by Sheldon and Hilpert (2012), and its Turkish adaptation was conducted by Kardaş and Yalçın (2018). The scale consists of 18 items and includes three sub dimensions (relatedness, competence, and autonomy). The BMPNS is a 5-point Likert scale, ranging from "I strongly disagree (1)" to "I strongly agree (5)." Higher scores indicate greater satisfaction of individuals' psychological needs. In the adaptation study, the results of the confirmatory factor analysis conducted for validity indicated that the original three-factor structure of the scale showed a good fit ($\chi^2/df = 2.92$; NNFI = .89; CFI = .92; GFI = .87; RMSEA = .082). As part of the reliability analyses, the Cronbach's alpha coefficients were found to be .70 for relatedness, .71 for competence, and .74 for autonomy. In the current study, the Cronbach's alpha coefficients were calculated as .74 for relatedness, .75 for competence, and .77 for autonomy.

Sense of Coherence Scale (SOCS): The SOCS was developed by Antonovsky (1987), with the Turkish adaptation conducted by Scherler and Lajunen (1997). The scale consists of 13 items and includes three dimensions (comprehensibility, manageability, and meaningfulness). The SOCS is a 7-point Likert scale. Higher scores indicate a greater sense of coherence among individuals. In their cross-cultural study, Scherler and Lajunen (1997) reported that the scale demonstrated a three-factor structure (comprehensibility, manageability, and meaningfulness) based on a confirmatory factor analysis conducted with 152 Turkish university students. Regarding the reliability analyses, the internal consistency coefficients (Cronbach's

alpha) were calculated as .57 for comprehensibility, .54 for manageability, .62 for meaningfulness, and .69 for the overall scale. In the present study, the Cronbach's alpha coefficients were found to be .69 for comprehensibility, .71 for manageability, .72 for meaningfulness, and .71 for the total scale.

Satisfaction With Life Scale (SWLS): The SWLS was developed by Diener et al. (1985), with the Turkish adaptation conducted by Köker (1991). The scale consists of 5 items and is unidimensional. It is a 7-point Likert scale, ranging from (1: Strongly disagree to 7: Strongly agree). Higher scores indicate a greater level of life satisfaction. In the validity analyses, the original unidimensional five-item structure of the scale was found to be a good fit for the Turkish population. In the reliability studies, the test-retest reliability coefficient was reported as .85, and the item-total correlations ranged between .71 and .80. Yetim (1991) reported a corrected split-half reliability of .75 and a Kuder-Richardson 20 (KR-20) value of .78. In the current study, the Cronbach's alpha internal consistency coefficient was calculated as .86.

Procedures and Ethics

The study involved volunteer university students who participated in face-to-face data collection using paper and pencil. Written informed consent was obtained from all participants, with no collection of personally identifiable information. The study adhered to the Declaration of Helsinki and received approval and registration from the Ethics Committee of Çukurova University. The necessary ethics committee approval for this research was obtained from the Social Sciences Ethics Committee of Çukurova University with document number E.1061441 dated 12.09.2024

Data Analysis

Initially, the normality of the data collected from participants was assessed by examining kurtosis and skewness values. A normal distribution is indicated when kurtosis and skewness values fall between +1 and -1 (Tabachnick & Fidell, 2007). The data was observed to follow a normal distribution (Table 2). Next, Pearson

correlation analysis was used to explore the relationships among psychological needs, sense of coherence, and life satisfaction. To examine the mediating role of sense of coherence in the relationship between psychological needs and life satisfaction, we employed PROCESS v3.4 (Model 4) by Hayes (2018).

Before conducting the mediation analysis, assumptions for PROCESS Model 4 including normality, homogeneity, linearity, autocorrelation, and multicollinearity were verified. The data showed a homogeneous distribution, and a linear relationship was observed in the scatter plot between the dependent, independent, and mediator variables. No multicollinearity was detected. Autocorrelation was tested with the Durbin-Watson coefficient, with values found between 1.81 and 2.11. As values around 2 indicate no autocorrelation issues (Kalaycı, 2006), no such problem was detected. In addition, multicollinearity was assessed using Variance Inflation Factor (VIF) and tolerance values. The results showed that all VIF values were below 10 and all tolerance values were above .10, indicating no multicollinearity problem (Field, 2016). For bootstrapping, 10,000 bootstrap samples were generated, with 95% confidence intervals. SPSS 24.0 was used to perform the analyses, including Pearson correlation and checks for normality, linearity, homogeneity, autocorrelation, and multicollinearity.

FINDINGS

Findings Regarding the Correlation Analysis between the Variables

Table 1 presents the correlation coefficients and descriptive statistics for the study variables.

Table 1. Descriptive Statistics and Correlation Analysis Results

Variables	1	2	3
1. Psychological Needs	-		
2. Sense of Coherence	.49**	-	
3. Life Satisfaction	.47**	.59**	-
Mean	67.29	53.20	18.08
Standard Deviation	9.39	7.84	2.50
Kurtosis	-.20	-.14	.02
Skewness	-.18	.57	-.17

As shown in Table 1, life satisfaction has a significant positive relationship with both psychological needs ($r = .47, p < .01$) and sense of coherence ($r = .59, p < .01$). Additionally, a significant positive relationship was found between psychological needs and sense of coherence ($r = .49, p < .01$). In summary, increases in the satisfaction of psychological needs and sense of coherence were found to be associated with higher levels of life satisfaction.

Mediation Analysis Findings

The study tested the mediating role of sense of coherence in the relationship between psychological needs and life satisfaction. The path coefficients between the variables are presented in Figure 2.

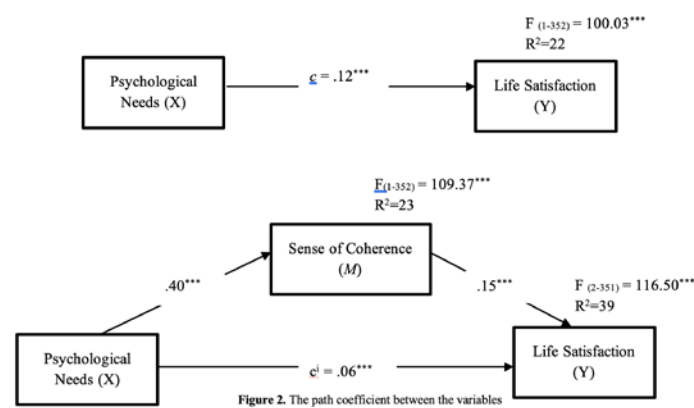


Figure 2. The path coefficient between the variables

As shown in Figure 2, the path coefficient between satisfaction of psychological needs and life satisfaction was first examined. Satisfaction of psychological needs was found to be a significant positive predictor of life satisfaction ($\beta = .12, p < .001$), accounting for approximately 22% of the variance in life satisfaction ($R^2 = .22, p < .001$). Next, sense of coherence was included in the model examining the relationship between satisfaction of psychological needs and life satisfaction. In this three-variable model, satisfaction of psychological needs was found to be a significant positive predictor of sense of coherence ($\beta = .40, p < .001$), and sense of coherence was also found to be a positive and significant predictor of life satisfaction ($\beta = .15, p < .001$). Together, satisfaction of psychological needs and sense of coherence account for approximately 39% of the variance in life satisfaction (R^2

$= .39, p < .001$). Additionally, with the inclusion of sense of coherence in the analysis, the path coefficient between satisfaction of psychological needs and life satisfaction remained significant but decreased in strength ($\beta = .06, p < .001$). The statistical significance of the indirect effect tested in this study, along with the upper and lower limits of the 95% confidence intervals and bootstrapping results, is presented in Table 2.

Table 2. The Findings of Bootstrapping Coefficients and Confidence Intervals					
Effect	Bootstrap ^a Coefficient	SE	<i>t</i>	Lower Limit ^b	Upper Limit ^b
Total effect	.125	.012	10.00	.100	.150
Direct effect	.062	.013	4.97	.037	.087
Indirect effect	.063			.043	.085

Note ^a Unstandardized; Based on 10,000 bootstrap samples, ^b %95 confidence intervals

As shown in Table 2, the indirect effect of psychological need satisfaction on life satisfaction through sense of coherence was found to be significant ($\beta = .063, 95\% \text{ CI} = .043, .085$). Additionally, the direct effect of psychological need satisfaction on life satisfaction was also significant ($\beta = .062, 95\% \text{ CI} = .037, .087$). In other words, sense of coherence plays a partial mediating role in the relationship between psychological need satisfaction and life satisfaction. This finding indicates that the satisfaction of psychological needs not only directly enhances life satisfaction, but also partially contributes to it indirectly through the development of individuals' sense of coherence.

DISCUSSION AND CONCLUSION

In this study, the relationship between university students' basic psychological needs, sense of coherence, and life satisfaction was examined. The results indicated that the fulfillment of basic psychological needs (BPN) predicts life satisfaction. Another finding of the study is that sense of coherence (SOC) mediates the relationship between basic psychological needs and life satisfaction. The following section discusses these findings within the framework of theoretical explanations covered in the relevant literature and the empirical findings of previous research.

When the first hypothesis (H_1) of this study was tested, it was confirmed that BPN is a predictor of life satisfaction. Consequently, H_1 was accepted. According to this finding, the fulfillment of individuals' basic psychological needs enhances their life satisfaction. The results of this study are consistent with those of similar research. Previous studies have also emphasized the positive effect of BPN on life satisfaction, supporting existing trends in the literature (e.g., Butkovic et al., 2020; Leversen et al., 2012; Okur & Özokes, 2020). The fulfillment of individuals' BPN contributes to their well-being (Chang et al., 2015; Ryan & Deci, 2000). Moreover, within the framework of SDT, individuals are considered proactive organisms inclined to optimize their lives rather than being passive entities (Vansteenkiste & Ryan, 2013). Thus, it is likely that individuals who exhibit more proactive behaviors experience increased well-being and, consequently, greater life satisfaction. Indeed, studies have shown that proactivity increases life satisfaction (e.g., Maurer & Chapman, 2018; Siebert et al., 2020). Additionally, research indicates that BPN acts as a mediator between gratitude and life satisfaction (Unanue et al., 2022). Another mediation model shows that BPN mediates the relationship between a lifestyle of voluntary simplicity and life satisfaction (Rich et al., 2017). Furthermore, other findings in the literature suggest that self-esteem is as significant a predictor of life satisfaction as BPN (Butkovic et al., 2020). The aforementioned factors may contribute to BPN's predictive power on life satisfaction in this study.

When the second hypothesis (H_2) of this study was tested, it was confirmed that SOC plays a mediating role in the relationship between BPN and life satisfaction. Consequently, H_2 was accepted. In other words, SOC serves as a mediator between BPN and life satisfaction, where an increase in SOC, associated with the fulfillment of BPN, leads to higher life satisfaction. Considering the source of this predictive relationship, BPN is conceptualized within SDT as a structure aimed at integration (Ryan & Deci, 2000). Furthermore, researchers in the field of SDT frequently refer to sense of coherence, theoretically arguing that the fulfillment of BPN enhances SOC (e.g., Deci & Ryan, 2000; Ryan & Deci, 2008; Reis et al., 2000). These theoretical explanations have been

supported by empirical studies in the literature, reinforcing this theoretical claim (e.g., Idan & Margalit, 2014). Moreover, an increase in the fulfillment of an individual's BPN is known to boost their motivation (Deci et al., 2017). Individuals with high levels of motivation are more likely to engage in activities that enhance their SOC and take an active role and responsibility in their daily routines. A review of the relevant literature reveals numerous studies examining the relationship between SOC and motivation focused on specific activities (e.g., Vogt et al., 2016; Lipowski et al., 2019; Yang et al., 2021). It is possible that self-regulation skills, which predict motivation, are also predictors of BPN (Orkibi & Ronen, 2017). In summary, motivation is an evidence-based predictor of SOC. On the other hand, the finding that SOC predicts life satisfaction in this study is consistent with the relevant literature (Dymecka et al., 2021; Dymecka et al., 2022; Moksnes & Haugan, 2015). In the literature, these concepts have often been studied in relation to stress in separate studies (for SOC, e.g., Gómez-Salgado et al., 2020; Ruiz-Frutos, 2020; for life satisfaction, e.g., Thompson et al., 2022; Kwok et al., 2022). At this point, SOC's role as a protective factor in coping with stress (Betke et al., 2021) and its predictive power in guiding individuals toward different activities and in facilitating communication with others during stressful situations (Konaszewski et al., 2021) may stem from the motivation derived from BPN satisfaction. Moreover, as SDT is a motivation theory, it has frequently been studied in relation to life satisfaction (e.g., Butkovic et al., 2020; Okur & Özokes, 2020; Walker & Kono, 2018). Since SOC increases in accordance with SDT, it is expected to enhance life satisfaction by serving as a protective factor in coping with stress and by helping individuals maintain an active role in stress management. Research has also shown that coping with stress in a healthy manner positively predicts life satisfaction (Ding et al., 2024; Milas et al., 2021). In conclusion, previous empirical findings have shown that BPN predicts SOC, and SOC, in turn, predicts life satisfaction. A study by Idan and Margalit (2014) revealed that BPN and SOC are positively correlated, while a study by Dymecka et al. (2021) demonstrated that SOC predicts life satisfaction. This indicates that SOC can serve as a mediating variable between BPN and life satisfaction—a finding also supported by our research.

Study Limitations

This study has some limitations. First, all data were collected through self-report measures, which may be influenced by social desirability bias. As a result, the findings related to the variables in this study are also based on self-reported data. Future studies may consider using alternative measurement tools to address this limitation. Second, as our research is cross-sectional, it is not suitable for making definitive causal inferences. Experimental studies could be designed to allow for stronger causal inferences between the variables examined in this study. This research was conducted with Turkish students from a university in the Mediterranean region, which also presents a limitation. The generalizability of the results could be improved by conducting similar studies with individuals from diverse regions, communities, and cultures. Another limitation of the study is that the potential effects of participants' sociodemographic characteristics on the relationships between variables were not controlled.

Based on the findings of this study, several recommendations are proposed for researchers and practitioners. The results of this study are expected to provide empirical contributions to future research and practice. The relevant recommendations are detailed below. Firstly, despite the study's limitations, the findings contribute to the literature on positive psychology. Researchers could design studies to identify moderating variables that either weaken or strengthen the mediating role of sense of coherence in the relationship between basic psychological needs (BPN) and life satisfaction. Additionally, to gain a clearer understanding of the cause-and-effect relationship, experimental research (Adu & Miles, 2023) could be conducted, along with qualitative, paradigm-based research to provide in-depth information on how sense of coherence influences the relationship between basic psychological needs and life satisfaction. Furthermore, it has been observed that cross-sectional methods are frequently used to support the mediation model in the literature, while longitudinal studies are scarce. To provide stronger evidence for the mediation model and to understand the variance in findings arising

from methodological differences, it would be beneficial to replicate studies using longitudinal methods. Additionally, investigating the variance caused by cross-cultural differences in the outcomes of these studies would be beneficial. Another point is that research on positive psychology theories often focuses on the benefits that the presence of certain variables provides to individuals, influenced by the researcher's perspective. However, understanding the outcomes of the absence or low levels of these variables is also necessary for a more holistic perspective. Therefore, future studies could benefit from analyses that separately evaluate the effects of both high and low levels of the relevant variables.

This study offers important insights for the restructuring of student support policies in higher education institutions and for various practices aimed at enhancing individuals' life satisfaction. The findings reveal that meeting basic psychological needs and supporting the development of a sense of coherence can significantly enhance life satisfaction. Accordingly, university counseling units can design structural and psychoeducational interventions that address students' psychological needs and foster a sense of coherence. Student-centered counseling systems, social clubs, and meaning-oriented seminars can support students' needs for autonomy, competence, and relatedness, thereby enhancing their overall life satisfaction. Moreover, the implications of the findings extend beyond the academic context and hold practical relevance for real-world applications. Professionals who play a role in individual development—such as parents, teachers, and social workers—should be made aware of the importance of recognizing and supporting psychological needs through the relationships they establish. These efforts are essential not only at the individual level but also for the reorganization of educational environments and the development of sustainable well-being policies. Interventions aimed at increasing life satisfaction, whether individual or group-based, should focus on satisfying basic psychological needs and fostering a sense of coherence, thus supporting individuals in building a more meaningful and coherent life.

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Author Contributions

All the authors have equal contributions.