



RESEARCH ARTICLE / ARAŞTIRMA MAKALESİ

The Instrumental Role of Problem-Solving Skills in the Relationship Between Wellness and Life Satisfaction in Adolescents

Ergenlerde Sağlıklı Yaşam ve Yaşam Memnuniyeti Arasındaki İlişkide Problem Çözme Becerilerinin Aracı Rolü

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Abstract:

Adolescence is a critical developmental period characterized by significant cognitive, emotional, and social changes that shape psychological adjustment, during which well-being and life satisfaction emerge as important indicators of mental health. Within this context, problem-solving skills are theoretically considered a potential mediating mechanism, as they facilitate adaptive coping, cognitive appraisal, and effective management of daily stressors. This study examined the mediating role of problem-solving skills in the relationship between adolescents' well-being and life satisfaction using a correlational research design with 460 high school students in Sakarya, Türkiye. The findings indicated a moderate, positive association between well-being and life satisfaction. Gender differences revealed that female adolescents reported higher levels of well-being and problem-solving skills, whereas male adolescents reported higher life satisfaction. Contrary to expectations, problem-solving skills did not significantly mediate the relationship between well-being and life satisfaction, suggesting that cognitive problem-solving abilities may not be a primary explanatory mechanism for this association in adolescence. Instead, affective and relational processes, such as emotional regulation and perceived social connectedness, may play a more central role by directly influencing adolescents' emotional experiences and overall life evaluations. Overall, these findings underscore the importance of multidimensional and gender-sensitive approaches in interventions aimed at enhancing adolescents' psychological well-being.

Keywords: Adolescence, Well-being, Life satisfaction, Problem-solving skills, Mediating role.

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Öz:

Ergenlik, psikolojik uyumun şekillenmesine yol açan önemli bilişsel, duygusal ve sosyal değişikliklerle karakterize edilen kritik bir gelişim dönemidir; bu dönemde refah ve yaşam doyumu, ruh sağlığının önemli göstergeleri olarak öne çıkmaktadır. Bu bağlamda, problem çözme becerileri, uyumsal başa çıkma, bilişsel değerlendirme ve günlük stres faktörlerinin etkin yönetimini kolaylaştırdığı için teorik olarak potansiyel bir aracı mekanizma olarak kabul edilmektedir. Bu çalışma, Türkiye'nin Sakarya ilinde 460 lise öğrencisiyle yapılan korelasyonel bir araştırma tasarımı kullanarak, ergenlerin iyilik hâli ile yaşam doyumu arasındaki ilişkide problem çözme becerilerinin aracılık rolünü incelemiştir. Bulgular, iyilik hali ile yaşam doyumu arasında orta düzeyde ve pozitif bir ilişki olduğunu gösterirken, cinsiyet farklılıkları açısından kız ergenlerin daha yüksek iyilik hali ve problem çözme becerileri bildirdiği, erkek ergenlerin ise daha yüksek yaşam doyumu bildirdiği ortaya çıkmıştır. Beklentilerin aksine, problem çözme becerileri, iyilik hâli ile yaşam doyumu arasındaki ilişkiyi önemli ölçüde aracılık etmedi; bu da, bilişsel problem çözme yeteneklerinin ergenlik döneminde bu ilişkide birincil açıklayıcı mekanizma olarak işlev görmeyebileceğini düşündürmektedir. Bunun yerine, duygusal düzenleme ve algılanan sosyal bağlılık gibi duygusal ve ilişkisel süreçler, ergenlerin duygusal deneyimlerini ve genel yaşam değerlendirmelerini doğrudan etkileyerek daha merkezi bir rol oynayabilir. Genel olarak, bu bulgular ergenlerin psikolojik refahını artırmayı amaçlayan müdahalelerde çok boyutlu ve cinsiyete duyarlı yaklaşımların önemini vurgulamaktadır.

Anahtar Kelimeler: Ergenlik, İyi oluş, Yaşam doyumu, Problem çözme becerileri, Aracılık rolü.

Introduction

Adolescence represents a critical developmental period marked by substantial cognitive, emotional, and social transformations that shape psychological adjustment and long-term well-being (Gál et al., 2022; Maarefvand & Shafiabady, 2023; Pérez-Gallego et al., 2020). During this stage, individuals acquire and refine essential skills such as problem-solving and decision-making, which are closely linked to adaptive functioning and mental health outcomes. Subjective well-being, encompassing both life satisfaction and affective experiences, reflects individuals' cognitive and emotional evaluations of their lives and is widely regarded as a core indicator of psychological health (Ardelt & Jeste, 2022; Koydemir et al., 2021).

Within this framework, problem-solving skills have been conceptualized as a potential mechanism underlying the relationship between well-being and life satisfaction. Effective problem-solving facilitates adaptive coping, enhances cognitive appraisal processes, and supports the regulation of emotional responses to daily stressors (Bariyyah, 2021; Lathren et al., 2021). Moreover, problem-solving is not solely a cognitive construct but also encompasses emotional and behavioural dimensions, and has been associated with resilience and emotional regulation capacities (Çınar et al., 2009; Frydenberg & Lewis, 2009). Empirical studies suggest that individuals with stronger problem-solving abilities tend to exhibit lower levels of stress and depressive symptoms, as well as higher levels of psychological adjustment (Okechukwu et al., 2022; Wei, 2022).

However, despite these theoretical and empirical links, the extent to which problem-solving skills function as a mediating mechanism between well-being and life satisfaction in adolescence remains unclear. Developmental models increasingly emphasize that affective and relational processes, such as emotion regulation and perceived social connectedness, may exert a more direct influence on adolescents' life evaluations than cognitive skills alone. Therefore, it is important to empirically test whether problem-solving skills serve as a significant explanatory pathway in this relationship or whether their role is more limited within the broader psychosocial context of adolescence.

Accordingly, this study aims to examine the mediating role of problem-solving skills in the relationship between adolescents' well-being and life satisfaction using a structural modeling approach.

Method

This study employed a correlational design to examine the mediating role of problem-solving skills in the relationship between adolescents' well-being and life satisfaction. A simple random sampling technique was used to ensure representativeness and equal probability of selection. The hypothesized research model, incorporating the proposed mediating pathways, is presented in Figure 1.

Participants and Sampling Procedure

The study sample comprised 460 adolescents (180 males, 280 females) enrolled in Grades 9 to 12 at Anatolian high schools in Sakarya, Türkiye. Participants were selected using a simple random sampling method, ensuring equal selection probability and representativeness of the target population (Karasar, 2000). The total student population was 3,122. The sample size was then calculated based on a 95% confidence level and a 0.05 margin of error. This calculation resulted in a minimum required sample of 460 participants. With respect to grade-level distribution, 85 students (18.5%) were in Grade 9, 85 (18.5%) in Grade 10, 155 (33.7%) in Grade 11, and 135 (29.3%) in Grade 12. The participants in this study ranged in age from 14 to 18 years.

Data Collection Tools

In this study, data were collected using three standardized instruments: the Well-Being Scale, the Life Satisfaction Scale, and the Problem-Solving Skills Inventory.

Well-Being Scale

Well-being was assessed using a multidimensional scale adapted into Turkish by Fidan and Usta (2013). The scale includes subdimensions such as family, friends, school, environment, and self-identity (Keldal, 2015). Higher scores indicate higher levels of perceived well-being. The internal consistency coefficients for the total scale and subdimensions ranged from acceptable to excellent in this study ($\alpha = .70-.91$).

Life Satisfaction Scale

Life satisfaction was measured using the Satisfaction with Life Scale (SWLS) developed by Diener et al. (1985). The scale consists of five items rated on a Likert-type format, with higher scores indicating greater life satisfaction. The Turkish adaptation of the scale has demonstrated good psychometric properties in adolescent samples. In this study, the internal consistency coefficient was acceptable (Cronbach's $\alpha = .74$) (Irmak & Kuruüzüm, 2009).

Problem Solving Skills Inventory

Developed by Heppner and Peterson (1982) and adapted into Turkish by Şahin et al. (1993), the PSSI consists of 35 items rated on a 6-point Likert scale. It assesses individuals' perceptions and strategies for dealing with everyday problems. Factor analysis identified six subdimensions: Hasty Approach ($\alpha = .78$), Thinking Approach ($\alpha = .76$), Avoidant Approach ($\alpha = .74$), Evaluative Approach ($\alpha = .69$), Self-Confident Approach ($\alpha = .64$), and Planned Approach ($\alpha = .59$). Overall internal consistency was high (Cronbach's $\alpha = .88$), with a split-half reliability coefficient of .81, indicating that the inventory is both psychometrically sound and suitable for use in Turkish adolescent populations.

Ethics

Prior to data collection, written informed consent was obtained from all participants. The study received ethical approval from the Istanbul Gelişim University Ethics Committee (Decision No. 2022-58-43; Date: 15.11.2022) and was conducted in accordance with the principles outlined in the Declaration of Helsinki.

Data Analysis

Data were analyzed using IBM SPSS Statistics 25 after screening for accuracy, completeness, and potential entry errors. Skewness and kurtosis values were within acceptable limits, although the kurtosis value for the Life Satisfaction Scale slightly exceeded the recommended thresholds. Parametric analyses were retained due to the large sample size and the robustness of the statistical procedures (George & Mallery, 2010). All analyses were conducted at a 95% confidence level.

Independent samples t-tests and one-way ANOVA were used to examine group differences, and effect sizes (Cohen's d and η^2) were calculated to assess practical significance. Pearson correlation coefficients were computed to evaluate bivariate relationships among well-being, life satisfaction, and problem-solving skills, while partial correlations were used to assess shared variance by controlling for problem-solving skills.

To test the hypothesized mediation model, Structural Equation Modeling (SEM) was conducted to evaluate overall model fit (CFI, TLI, RMSEA, SRMR). Additionally, mediation analysis was performed using Hayes' PROCESS macro (Model 4) with 5,000 bootstrap resamples to estimate total, direct, and indirect effects. The indirect effect was considered significant if the 95% confidence interval did not include zero.

Results

Table 1. Descriptive statistics for the scales used in the study and Cronbach's alpha values for the study scales and subscales

Variable	Min	Max	M	SD	Kurtosis	SE	Skewness	SE	Items	α
Well-being Scale	1.00	5.00	3.82	1.39	1.78	0.12	1.29	0.24	38	.71
Life Satisfaction Scale	1.00	5.00	3.78	0.34	-2.18	0.12	1.32	0.24	7	.79
Family	1.00	5.00	3.87	0.35	-2.73	0.12	1.97	0.24	8	.81
Friends	1.00	5.00	3.86	0.34	-2.12	0.12	1.51	0.24	8	.70
School	2.00	4.00	3.93	0.95	1.70	0.12	1.33	0.24	8	.91
Environment	1.00	5.00	3.89	0.31	-2.58	0.12	1.70	0.24	7	.76
Self-Identity	1.00	5.00	3.95	0.22	-1.08	0.12	1.72	0.24	5	.74
Problem-Solving Skills Inventory (Total)	1.00	5.00	4.00	0.49	-1.22	0.12	1.00	0.24	35	.79
Hasty Approach	1.00	5.00	3.89	0.33	-1.96	0.12	1.27	0.24	9	.81
Thinking Approach	1.00	5.00	3.89	0.33	-1.96	0.12	1.27	0.24	5	.91
Avoidant Approach	1.00	5.00	3.60	0.57	-1.04	0.12	0.09	0.24	6	.93
Evaluative Approach	1.00	5.00	3.75	0.53	-1.01	0.12	1.15	0.24	3	.92
Confident Approach	1.00	5.00	3.71	0.58	-1.86	0.12	1.34	0.24	7	.70
Planned Approach	1.00	5.00	3.81	0.58	-1.86	0.12	1.34	0.24	5	.78

The mean well-being score was 3.82 (SD = 1.39), with slight positive skewness (Skewness = 1.29) and moderate kurtosis (Kurtosis = 1.78). Life satisfaction exhibited a mean of 3.78 (SD = 0.34), reflecting a relatively high average. However, the distribution exhibited a pronounced negative kurtosis (Kurtosis = -2.18). Among the well-being subdimensions, Family (M = 3.87, SD = 0.35), Friends (M = 3.86, SD = 0.34), Environment (M = 3.89, SD = 0.31), and Self-Identity (M = 3.95, SD = 0.22) exhibited negatively skewed distributions, indicating that most participants reported higher levels in these domains. In contrast, School showed a more dispersed distribution (M = 3.93, SD = 0.95) with positive skewness (Skewness = 1.33), reflecting greater variability. The Problem-

Solving Skills Inventory demonstrated a high overall mean score (M = 4.00, SD = 0.49), indicating generally strong perceived problem-solving abilities among participants. Among its subdimensions, the Thinking and Hasty approaches had identical means (M = 3.89, SD = 0.33), both of which demonstrated moderate positive skewness (Skewness = 1.27). The Avoidant approach exhibited a slightly lower mean (M = 3.60, SD = 0.57) with a relatively symmetrical distribution. The Evaluative, Self-Confident, and Planned approaches showed means ranging from 3.71 to 3.81, accompanied by positive skewness and negative kurtosis, suggesting relatively high scores with moderate variability. All scales showed acceptable to excellent reliability ($\alpha = .70-.93$).

Table 2: Independent-samples t-test results for well-being, life satisfaction, and problem-solving skills and their subscales

Variable		n	M	SD	t	p	Cohen's d
Well-being Scale	Male	180	3.83	0.38	2.46	.014	0.235
	Female	280	3.98	1.89			
Life Satisfaction Scale	Male	180	3.99	0.32	2.78	.006	0.266
	Female	280	3.87	0.34			
Family	Male	180	3.90	0.30	0.34	.730	0.032
	Female	280	3.85	0.39			
Friend	Male	180	3.88	0.33	0.57	.570	0.054
	Female	280	3.85	0.35			
School	Male	180	3.86	0.34	0.23	.820	0.022
	Female	280	3.98	1.19			
Environment	Male	180	3.92	0.27	0.46	.650	0.044
	Female	280	3.88	0.33			
Self-identity	Male	180	3.91	0.28	0.77	.440	0.074
	Female	280	3.97	0.17			
Problem-Solving Skills Inventory	Male	180	3.99	0.08	2.23	.026	0.213
	Female	280	4.00	0.05			
Hasty approach	Male	180	3.89	0.35	0.46	.650	0.044
	Female	280	3.89	0.31			
Thinking approach	Male	180	3.89	0.35	0.55	.580	0.053
	Female	280	3.89	0.31			
Avoidant approach	Male	180	3.65	0.57	0.77	.440	0.074
	Female	280	3.56	0.56			
Evaluative approach	Male	180	3.72	0.55	0.23	.820	0.022
	Female	280	3.77	0.51			
Confident approach	Male	180	3.62	0.66	0.15	.880	0.014
	Female	280	3.77	0.51			
Planned approach	Male	180	3.62	0.66	0.60	.550	0.057
	Female	280	3.77	0.51			

Independent samples t-tests were conducted to examine potential gender differences in well-being, life satisfaction, and problem-solving skills. The findings indicated a significant discrepancy in well-being scores between male (M = 3.83, SD = 0.38) and female adolescents (M = 3.98, SD = 1.89), $t(407) = 2.46, p = .014$, with females reporting higher levels of well-being. A significant gender difference was found in life satisfaction, with males (M = 3.99, SD = 0.32) exhibiting marginally higher satisfaction than females (M = 3.87, SD = 0.34), $t(407) = 2.78, p =$

.006. Regarding problem-solving skills, a small but statistically significant difference was observed, with females (M = 4.00, SD = 0.05) scoring marginally higher than males (M = 3.99, SD = 0.08), $t(407) = 2.23, p = .026$. No significant gender differences were identified in the subdimensions of problem-solving approaches (i.e., hasty, thoughtful, avoidant, evaluative, confident, and planned approaches), all $p > .05$. No significant differences were found in subdimensions (all $p > .05$).

Table 3: ANOVA results for well-being, life satisfaction, and problem-solving skills and their subscales across grade levels

Variable	Grade	n	M	SD	F	p
Well-Being Scale	Grade 9	85	3.83	0.40	0.95	.23
	Grade 10	85	3.86	0.35		
	Grade 11	155	4.19	0.30		
	Grade 12	135	3.80	0.40		
Life Satisfaction Scale	Grade 9	85	3.90	0.30	0.46	.12
	Grade 10	85	3.81	0.40		
	Grade 11	155	3.90	0.30		
	Grade 12	135	3.91	0.28		
Family	Grade 9	85	3.89	0.34	1.34	.68
	Grade 10	85	3.85	0.40		
	Grade 11	155	3.91	0.29		
	Grade 12	135	3.85	0.36		
Friend	Grade 9	85	3.89	0.31	0.46	.54
	Grade 10	85	3.87	0.34		
	Grade 11	155	3.87	0.34		
	Grade 12	135	3.82	0.38		
School	Grade 9	85	3.87	0.37	1.35	.46
	Grade 10	85	4.04	0.39		
	Grade 11	155	3.89	0.32		
	Grade 12	135	3.90	0.30		
Environment	Grade 9	85	3.86	0.35	0.12	.57
	Grade 10	85	3.87	0.33		
	Grade 11	155	3.98	0.31		
	Grade 12	135	3.87	0.34		
Self-Identity	Grade 9	85	3.96	0.20	1.99	.12

	Grade 10	85	3.94	0.24		
	Grade 11	155	3.94	0.24		
	Grade 12	135	3.96	0.21		
Problem-Solving Skills Inventory	Grade 9	85	4.00	0.05	1.46	.11
	Grade 10	85	4.00	0.05		
	Grade 11	155	4.00	0.05		
	Grade 12	135	3.99	0.10		
Hasty Approach	Grade 9	85	3.86	0.35	1.87	.23
	Grade 10	85	3.83	0.38		
	Grade 11	155	3.94	0.32		
	Grade 12	135	3.96	0.21		
Thinking Approach	Grade 9	85	3.86	0.35	1.40	.32
	Grade 10	85	3.83	0.38		
	Grade 11	155	3.94	0.32		
	Grade 12	135	3.96	0.21		
Avoidant Approach	Grade 9	85	3.54	0.54	1.35	.23
	Grade 10	85	3.51	0.57		
	Grade 11	155	3.60	0.65		
	Grade 12	135	3.76	0.46		
Evaluative Approach	Grade 9	85	3.77	0.47	1.13	.09
	Grade 10	85	3.66	0.54		
	Grade 11	155	3.71	0.63		
	Grade 12	135	3.87	0.43		
Confident Approach	Grade 9	85	3.77	0.47	1.99	.06
	Grade 10	85	3.61	0.60		
	Grade 11	155	3.71	0.63		
	Grade 12	135	3.76	0.60		
Planned Approach	Grade 9	85	3.77	0.47	0.99	.40
	Grade 10	85	3.61	0.60		
	Grade 11	155	3.71	0.63		
	Grade 12	135	3.76	0.60		

A one-way analysis of variance (ANOVA) was conducted to examine differences in well-being, life satisfaction, and problem-solving skills across grade levels (Grades 9–12). The results indicated no statistically significant differences in overall well-being across grade levels ($F(3, 456) = 0.95, p = .232$). Although students in Year 11 exhibited marginally elevated well-being ($M = 4.19, SD = 0.30$), the difference was not statistically significant. A significant gender difference was found in life satisfaction. Furthermore, analyses of the subjective well-being subdimensions indicated no significant grade-level

differences for family ($p = .677$), friends ($p = .543$), school ($p = .455$), environment ($p = .567$), or self-identity ($p = .123$). Regarding problem-solving skills, the overall mean score was relatively high ($M = 3.99, SD = 0.05$), and no significant differences were found across grade levels ($F(3, 456) = 1.46, p = .111$). In addition, the problem-solving subdimensions – namely, hasty, thinking, avoidant, evaluative, confident, and planned approaches – did not demonstrate statistically significant variation across grades (all $ps > .05$).

Table 4. Partial correlation between well-being and life satisfaction, controlling for problem-solving skills

Variables	1	2	3	Partial r^a
1. Well-Being Scale	—	.43**	-.00	.23**
2. Life Satisfaction Scale	.43**	—	.02	.23**
3. Problem-Solving Skills Inventory	-.00	.02	—	—

Note: Zero-order correlations were calculated with $n = 460$. Partial correlations were calculated with $n = 406$. ** $p < .01$.

As shown in Table 4, well-being was moderately and positively correlated with life satisfaction. When problem-solving skills were controlled for, this association

remained statistically significant but decreased in magnitude, indicating shared variance rather than a mediating effect.

Table 5. Mediation analysis of problem-solving skills in the relationship between well-being and life satisfaction

Variable	Predictor	B	SE	t	p	LLC I	ULC I
Problem-Solving Skills	Well-Being (a path)	2.94	1.63	1.81	.072	-0.27	6.15
Life Satisfaction	Problem-Solving Skills (b path)	-0.00	0.01	-0.02	.982	-0.03	0.03
Life Satisfaction	Well-Being (c path: total effect)	0.43	0.05	8.60	.001	0.33	0.53
Life Satisfaction	Well-Being (c' path: direct effect)	0.42	0.05	8.40	.001	0.32	0.52

Effect: -0.00, Boot SE: 0.06, LLCI: -0.12, ULCI: 0.13

The mediation analysis indicated that the total effect of well-being on life satisfaction was statistically significant ($B = 0.43$, $SE = 0.05$, $p < .001$), suggesting that higher levels of well-being were associated with higher life satisfaction. However, the correlation between well-being and problem-solving skills was not statistically significant ($B = 2.94$, $p = .072$). Similarly, no significant association was observed between problem-solving skills and life satisfaction ($B = -0.00$, $p = .982$). Moreover, the indirect effect was not significant, as the bootstrap confidence interval included zero (95% CI [-0.12, 0.13]). These findings suggest that problem-solving skills do not mediate the relationship between well-being and life

satisfaction. Bootstrap sample size = 5,000. LLCI = lower limit confidence interval; ULCI = upper limit confidence interval. The indirect effect is considered significant if the confidence interval does not include zero.

The overall fit of the structural equation model was found to be within acceptable limits: $\chi^2(247) = 498.26$, $p < .001$; $\chi^2/df = 2.02$; CFI = .957; TLI = .943; RMSEA = .048 (90% CI [.041, .056]) and SRMR = .046. These indices meet the recommended thresholds (Hu & Bentler, 1999), indicating that the hypothesized mediation model provides a good fit to the observed data. The model is presented in Figure 1.

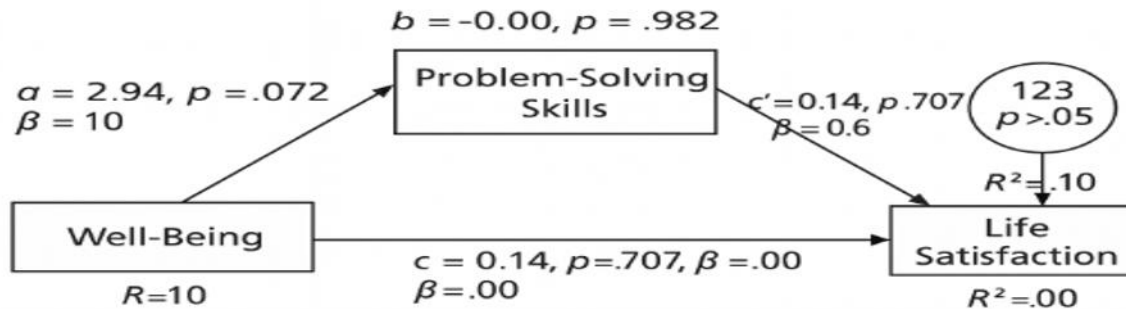


Figure 1. Structural equation model illustrating the mediating role of problem-solving skills in the relationship between well-being and life satisfaction

Discussion

Contrary to the initial hypothesis, problem-solving skills did not mediate the relationship between well-being and life satisfaction. Neither the association between well-being and problem-solving skills nor the link between problem-solving skills and life satisfaction was statistically significant, and the indirect effect was not supported. This finding suggests that, despite its theoretical relevance, problem-solving may not function as a central explanatory mechanism linking well-being to life satisfaction during adolescence.

One possible explanation for this result lies in the developmental characteristics of adolescence. Although problem-solving is an important cognitive and behavioural skill, adolescents' evaluations of life satisfaction may be more strongly influenced by affective and relational processes rather than cognitive competencies alone. In this regard, emotion regulation and perceived social support may play a more proximal role in shaping subjective evaluations of life, as they directly influence emotional experiences and interpersonal functioning. Previous research has consistently demonstrated that feelings of belonging, social connectedness, and supportive relationships are key determinants of life satisfaction during adolescence (Jiang et al., 2016; Reis, 2001; Siu & Shek, 2010). Therefore, the present findings support the notion that socio-emotional mechanisms may outweigh cognitive skills in explaining well-being outcomes in this developmental period.

Another important interpretation is that problem-solving skills may operate as a distal or contextual factor rather than a direct mediator. While these skills contribute to adaptive functioning and resilience, their effects on life satisfaction may be indirect and contingent upon other psychological processes, such as coping styles, emotional awareness, or interpersonal competence. This perspective aligns with contemporary models of adolescent development, which emphasize the interaction between

cognitive, emotional, and social domains rather than linear, single-path mediation processes.

Gender differences were observed: female adolescents reported higher well-being and problem-solving skills, whereas male adolescents reported higher life satisfaction. However, the effect sizes were small, indicating limited practical significance. These findings suggest that gender, when considered in isolation, may not serve as a strong determinant of psychological functioning in adolescence. This pattern is consistent with previous research indicating that gender differences in well-being-related constructs are often modest and context-dependent (Kim & Park, 2019; Parveen & Javed, 2015).

The absence of a significant indirect effect underscores the importance of employing rigorous statistical approaches, such as bootstrap-based mediation analysis, to avoid overinterpreting relationships between variables (Hayes, 2022). At the same time, this finding points to the need for expanding theoretical models by incorporating alternative mediating mechanisms. Future research should examine the roles of emotion regulation, perceived social support, and interpersonal processes as potential mediators of the relationship between well-being and life satisfaction. Additionally, longitudinal and experimental designs are needed to better capture the dynamic and potentially bidirectional nature of these relationships over time.

Limitations and Recommendations

Several limitations should be considered when interpreting the findings of this study. First, the cross-sectional design restricts the ability to draw causal inferences regarding the relationships among well-being, problem-solving skills, and life satisfaction. Second, the reliance on self-report measures may have introduced social desirability and recall biases. Third, the sample was limited to adolescents from a specific region in Türkiye, which may constrain the generalizability of the findings to other cultural and demographic contexts. In addition, the hypothesized mediating role of problem-solving skills was not

supported, suggesting the need to examine alternative explanatory mechanisms.

Future research should employ longitudinal and experimental designs to better clarify causal relationships.

Expanding the scope of variables to include sociodemographic and psychosocial factors, such as socioeconomic status, family dynamics, and peer relationships, may provide a more comprehensive understanding of adolescent well-being and life satisfaction. Furthermore, integrating qualitative methods within mixed-methods designs could offer deeper insights into adolescents' lived experiences. Finally, cross-cultural replication studies are recommended to enhance the external validity of the findings and support the development of culturally sensitive interventions.

Conclusion

This study demonstrates a positive association between adolescents' well-being and life satisfaction. This indicates that while cognitive problem-solving contributes to adaptive functioning, it is not the primary pathway through which well-being influences life satisfaction.

Emotional and relational factors (emotion regulation, social support) play a central role. Gender differences were observed, with females reporting higher well-being and problem-solving skills, and males reporting higher life satisfaction; however, effect sizes were small, suggesting limited practical significance.

These findings highlight the importance of designing interventions that address both emotional and social dimensions of well-being, rather than focusing solely on cognitive skills. Programs that include training in emotional regulation, peer support, and family engagement may be particularly beneficial. Future research should use longitudinal designs and explore alternative mediators.

Declarations

Ethics Committee Approval

The research was approved by the İGÜ Ethics Committee with Decision No. 2022-58-43.

Informed Consent

Informed consent was obtained from all participants included in the study.

Data Availability Statement

The data used in this study are not publicly available due to participant confidentiality and ethical committee approval requirements. However, data access may be granted upon reasonable request to the corresponding author.

Competing Interests

The authors declare no conflicts of interest.

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