Journal Website

Article history:
Received 02 February 2026
Revised 02 July 2026
Accepted 09 July 2026
Initial Publication 13 October 2026
Final Publication 01 November 2026

Iranian Journal of Neurodevelopmental Disorders

Volume 5, Issue 6, pp 1-14

E-ISSN: 2980-9681

Structural Equation Modeling of the Mediating Role of Meaning in Life in Predicting Adolescents' High-Risk Behaviors Based on Motivational Structure

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A r t i c l e I n f o

Article type:
Original Research

How to cite this article:
Sefatgol, A., Vatankhah, H., & Zare, H. (2026). Structural Equation Modeling of the Mediating Role of Meaning in Life in Predicting Adolescents' High-Risk Behaviors Based on Motivational Structure. *Iranian Journal of Neurodevelopmental Disorders, 5*(6), 1-14.
https://doi.org/10.61838/kman.jndd.905

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A B S T R A C T

Purpose: The present study aimed to examine the mediating role of meaning in life in the relationship between motivational structure and high-risk behaviors among adolescents.

Methods and Materials: This descriptive correlational study was conducted using covariance-based structural equation modeling. The statistical population included all students enrolled in the second cycle of secondary education in Iran, and the accessible population consisted of secondary school students in the city of Zabol. Based on G*Power estimation, 153 students were selected through stratified random sampling. Data were collected using standardized self-report instruments measuring motivational structure, meaning in life, and adolescent high-risk behaviors. After screening the data for missing values, outliers, and normality assumptions, descriptive statistics, Pearson correlation coefficients, confirmatory factor analysis, and structural equation modeling were conducted using SPSS and AMOS software. Model fit was evaluated using χ^2/df, CFI, TLI, IFI, RMSEA, and SRMR indices. The indirect effect was examined using bootstrapping procedures.

Findings: The results showed that motivational structure had a positive and significant direct effect on meaning in life ($\beta = 0.62$, $p < 0.001$). Meaning in life had a negative and significant direct effect on high-risk behaviors ($\beta = -0.39$, $p < 0.001$). Motivational structure also had a negative and significant direct effect on high-risk behaviors ($\beta = -0.31$, $p = 0.002$). The indirect effect of motivational structure on high-risk behaviors through meaning in life was significant ($\beta = -0.24$, $p = 0.001$), confirming the mediating role of meaning in life. The total effect of motivational structure on high-risk behaviors was also significant ($\beta = -0.55$, $p < 0.001$). The final model showed acceptable fit indices and explained 38% of the variance in meaning in life and 41% of the variance in high-risk behaviors.

Conclusion: The findings indicate that adolescents with a more coherent and adaptive motivational structure experience greater meaning in life and are less likely to engage in high-risk behaviors. Meaning in life functions as an important psychological mechanism through which motivational structure reduces risky behavioral tendencies.

Keywords: *motivational structure; meaning in life; high-risk behaviors; adolescents; structural equation modeling*

1. Introduction

Adolescence is a developmental period in which biological maturation, cognitive reorganization, social role transition, and identity formation occur simultaneously, making this stage highly sensitive to both adaptive growth and maladaptive behavioral patterns. During this period, adolescents increasingly seek autonomy, experiment with social roles, and become more exposed to peer influence, academic pressure, digital environments, family expectations, and emotional instability. These developmental conditions can increase vulnerability to high-risk behaviors, including substance-related behaviors, aggressive and violent tendencies, unsafe interpersonal behaviors, problematic internet use, problematic gaming, and self-injurious behaviors. Recent adolescent mental health literature shows that high-risk behaviors are rarely isolated events; rather, they often emerge from the interaction of stress, impaired self-regulation, weakened meaning systems, maladaptive coping, and social-contextual pressures. For example, studies on nonsuicidal self-injury have shown that adolescent self-harm is associated with emotional distress, academic stress, parental expectations, and broader psychological vulnerability (Biswas, 2026). Clinical network evidence has also emphasized that nonsuicidal self-injury in adolescents is linked with quality of life and psychiatric symptoms, indicating that risky behaviors should be understood within a broader psychological system rather than as single behavioral outcomes (Győri et al., 2021). Similarly, longitudinal research has shown that stressful life events can predict nonsuicidal self-injury through depressive symptoms, highlighting the process-based nature of adolescent risk (Wan et al., 2023).

High-risk behaviors among adolescents are also increasingly expressed through digital and online contexts. Problematic internet use, online risky behaviors, mobile phone overuse, and problematic gaming have become important behavioral concerns because adolescents' social, educational, and recreational lives are deeply embedded in digital environments. Path-analytic evidence from Hong Kong adolescents has shown that problematic internet use is influenced by multiple psychological and contextual predictors, suggesting that digital risk should be analyzed through multivariable models rather than simple descriptive approaches (Chin & Leung, 2022). Research on early adolescents has further indicated that internet addiction may shift across latent profiles over time and is influenced by contributing factors that shape developmental trajectories (Hu et al., 2022). Studies on problematic mobile phone use during quarantine conditions have also shown that perceived stress can contribute to problematic digital behavior through mediated and moderated psychological pathways (Jiang & Zhang, 2024). In addition, problematic gaming has been linked to parenting practices through the satisfaction and frustration of psychological needs, showing that adolescents' risky engagement with digital environments may reflect unmet motivational and emotional needs (Pivetta et al., 2025). These findings indicate that adolescent high-risk behaviors should be conceptualized as multidetermined phenomena that emerge from the interaction between internal motivational organization and external developmental conditions.

Stress is one of the most consistent factors associated with adolescent risk-taking and maladjustment, but the effect of stress depends on how adolescents interpret, regulate, and organize their experiences. Research has shown that stress may mediate the relationship between risk and protective factors and online risky behaviors, which indicates that stressful conditions become behaviorally significant when they disrupt adolescents' coping and self-regulation systems (Velki & Milić, 2021). Studies conducted during the COVID-19 period similarly demonstrated that stress was associated with depressive symptoms among high school students and that sleep quality and optimism played important roles in this relationship (Nguyễn et al., 2023). Another study found that mindfulness had beneficial effects on stress, life satisfaction, and savoring beliefs among adolescents during the pandemic, suggesting that adaptive awareness and positive meaning-related capacities can reduce the psychological impact of stressful contexts (Lau et al., 2023). Social media use may also influence adolescent well-being through indirect mechanisms, as mobile social media use has been associated with life satisfaction in moderated mediation models (Meng et al., 2023). These findings support the view that adolescent risk cannot be fully explained by exposure to stressors alone; instead, researchers must examine the psychological mechanisms that transform stress into either maladaptive behavior or adaptive adjustment.

One psychological construct that has received growing attention in adolescent mental health research is meaning in life. Meaning in life refers to the extent to which individuals perceive their existence as purposeful, coherent, and significant. In adolescence, meaning in life may help organize identity, guide decision-making, strengthen

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resilience, and reduce impulsive or harmful behaviors by providing adolescents with a framework through which they can interpret difficulties and regulate their goals. Research among Chinese high school seniors has shown that the absence of meaning is associated with alienation, lower life satisfaction, and depression, emphasizing that meaninglessness may create a psychological context in which adolescents become more vulnerable to emotional distress (Hou et al., 2025). Evidence from junior high school students also indicates that meaning in life is negatively associated with depression and that this relationship may be explained through cognitive failures and mindfulness (Li et al., 2023). In the field of suicide-related research, meaning in life has been identified as a mediator between basic psychological needs and suicidal ideation, suggesting that adolescents whose psychological needs are satisfied may experience stronger meaning and consequently lower suicidal vulnerability (Li et al., 2024). Meaning in life has also been found to moderate the relationship between family functioning and suicidal ideation, showing that meaning can serve as a protective factor even under family-related risk conditions (Yang et al., 2022).

The protective function of meaning in life is especially relevant to adolescent high-risk behaviors because many risky behaviors arise in contexts of emptiness, alienation, defeat, emotional exhaustion, or lack of future orientation. Recent evidence shows that awe can reduce nonsuicidal self-injury urges among adolescents through a chain-mediating pathway involving meaning in life and ego-depletion, suggesting that meaning may reduce self-harm vulnerability by restoring psychological resources and reducing depletion (Deng et al., 2025). Similarly, studies on adolescent suicidal ideation have shown that ambivalent attitudes toward life and death are associated with suicide ideation through depression, demonstrating that adolescents' orientation toward life itself is central to risk processes (Toukhy et al., 2024). Research on loneliness and suicidal ideation has further shown that depression and hope play key explanatory roles, which suggests that future-oriented and meaning-related psychological resources may buffer the effects of isolation (Xie et al., 2025). In the context of bullying, school belonging, self-efficacy, and meaning in life have been shown to mediate the relationship between victimization and subjective well-being, demonstrating that meaning is embedded in both interpersonal and self-regulatory systems (Seon & Smith-Adcock, 2021). Gender differences have also been observed in the relationship between cyberbullying victimization and meaning in life, with fatalism and self-concept clarity playing important roles, indicating that meaning-related processes may vary according to adolescents' identity and self-understanding (Geng et al., 2021).

The development of meaning in life is strongly influenced by social support, family climate, school context, and perceived relational value. Adolescents do not construct meaning in isolation; rather, meaning is formed through relationships, recognition, achievement experiences, future expectations, and the perceived significance of personal goals. Research has shown that different types of perceived social support can predict adolescents' sense of meaning in life through social-emotional competence, suggesting that supportive relationships may strengthen meaning by improving adolescents' emotional and interpersonal capacities (Zhang et al., 2025). Teacher emotional support has also been associated with adolescent burnout through the roles of family cohesion and meaning in life, indicating that educational and family contexts jointly shape adolescents' motivational and existential adjustment (Li et al., 2026). Parent-child relationship and educational involvement have been linked to adolescent nonsuicidal self-injury through perceived stress and meaning in life, showing that family processes influence risk behavior partly by shaping adolescents' sense of meaning (Zeng et al., 2023). In addition, adverse childhood experiences have been associated with depressive symptoms among secondary vocational school students through meaning in life, suggesting that meaning may be a psychological pathway through which early adversity influences later emotional problems (Tang, 2023). Research on maltreated adolescents has also emphasized that developmental assets can promote positive growth through multiple mediating mechanisms, supporting the importance of protective developmental resources in reducing vulnerability (Yuan, 2025).

Although meaning in life is an important protective construct, it is closely connected to adolescents' motivational structure. Motivational structure refers to the organization of goals, expectations, perceived control, emotional commitment, and goal coherence that directs behavior. A coherent motivational structure enables adolescents to regulate action, resist impulsive tendencies, tolerate frustration, and evaluate immediate choices in light of long-term goals. When adolescents have fragmented, conflicting, or weak motivational structures, they may be more likely to engage in behaviors that provide short-term relief, excitement, belonging, or escape, even when such behaviors create long-term harm. Research on adolescent

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mental time travel has shown that the capacity to connect past, present, and future experiences predicts meaning in life through self-continuity, indicating that adolescents' temporal and motivational organization is central to meaning development (Yuan et al., 2024). Studies on academic stress have also shown that grit is involved in the association between academic stress and meaning in life through school burnout and self-compassion, suggesting that persistent goal orientation and motivational endurance are important for maintaining meaning under pressure (Wang et al., 2024). Research on rumination has further indicated that coping style and perceived chronic social adversity mediate the effect of rumination on meaning in life, showing that maladaptive cognitive-motivational patterns can weaken adolescents' meaning systems (Yu & Zhao, 2023).

Motivational structure may also influence high-risk behaviors through self-control, coping efficacy, and the ability to manage cumulative risk. Adolescents with stronger motivational organization may be more capable of regulating internet use, resisting peer pressure, and maintaining goal-directed behavior despite stress. A longitudinal study found that internet self-control was related to problematic internet use through meaning in life, showing that self-regulatory capacity and meaning may jointly reduce digital risk (Wang, Ma, et al., 2023). Another study found that internet adaptability influenced internet addiction through the serial mediating effects of meaning in life and anxiety, indicating that adolescents' capacity to adapt to the online environment may affect risk through existential and emotional pathways (Wang, Ye, et al., 2023). Evidence also shows that social problem-solving and coping efficacy mediate the relationship between cumulative risk and adolescent mental health, supporting the importance of motivational and coping-related mechanisms in developmental adjustment (Xiong et al., 2021). From this perspective, motivational structure is not merely a personality feature; it is a functional system that connects adolescents' goals, perceived agency, coping resources, and behavioral choices. Therefore, meaning in life may be a central mediator through which motivational structure reduces high-risk behaviors.

Family, peer, and emotional factors further clarify why a motivational-meaning framework is needed for understanding adolescent risk. Social support has been found to reduce depressive symptoms during the pandemic through loneliness and meaning in life, showing that interpersonal resources can operate through meaning-based processes (Liu et al., 2022). Stressful life events have also been associated with subjective well-being through depression, while perceived social support moderates these relationships among vocational school female adolescents (Ouyang et al., 2021). In the domain of nonsuicidal self-injury, stressful life events may increase risk through depression, but resilience can moderate this pathway, demonstrating that protective resources can alter the psychological consequences of adversity (Wei, Wang, et al., 2022). Gratitude has also been shown to buffer the effects of stressful life events and deviant peer affiliation on adolescent nonsuicidal self-injury, suggesting that positive psychological resources can weaken the link between environmental risk and harmful behavior (Wei, Li, et al., 2022). These findings are consistent with a structural equation modeling approach because they show that adolescent risk is shaped by multiple direct, indirect, mediating, and moderating pathways rather than by a single linear predictor.

Despite the growing literature on meaning in life, stress, family functioning, digital behavior, self-injury, and adolescent mental health, fewer studies have directly examined meaning in life as a mediator between adolescents' motivational structure and high-risk behaviors. Existing studies have separately demonstrated that meaning in life is linked to depression, suicidal ideation, self-injury, internet addiction, academic stress, bullying victimization, family functioning, social support, and life satisfaction, but the motivational basis of this meaning-risk relationship remains insufficiently clarified. A structural equation modeling approach is particularly appropriate for this purpose because it allows the researcher to test both direct and indirect effects among latent psychological constructs and to determine whether meaning in life explains part of the pathway from motivational structure to risky behavior. This approach is consistent with contemporary adolescent research in which mediated and moderated models are increasingly used to explain how contextual and psychological factors influence behavioral and emotional outcomes (Ratcliff et al., 2025). It also provides an empirical framework for identifying whether adolescents' goal coherence, perceived control, and emotional commitment to goals reduce high-risk behaviors directly or whether their effect is partly transmitted through a stronger sense of meaning in life.

Accordingly, the present study aimed to model the mediating role of meaning in life in predicting adolescents' high-risk behaviors based on motivational structure.

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2. Methods and Materials

2.1. Study Design and Participants

The present study was designed as a descriptive correlational study using structural equation modeling. The purpose of the study was to examine the direct and indirect relationships among motivational structure, meaning in life, and high-risk behaviors among adolescents, with particular emphasis on testing the mediating role of meaning in life in the relationship between motivational structure and high-risk behaviors. The target population of the study, defined as the population to which the researcher intends to generalize the findings, included all students enrolled in the second cycle of secondary education in Iran (Raymond & Darsaut, 2025). The accessible population consisted of students studying in second-cycle secondary schools in the city of Zabol during the academic year of the study. Because the research variables are psychological and behavioral constructs that may vary according to school context, gender, and educational level, the sampling process was conducted in a way that could provide an acceptable representation of the accessible population.

The sample size was determined based on equation-based sample size estimation procedures appropriate for correlational and structural equation modeling studies (Djamba & Neuman, 2002). In the present study, G*Power software was used to calculate the minimum required sample size, because this software provides a systematic basis for estimating sample size according to effect size, statistical power, and significance level considerations (Memon et al., 2020). Based on an effect size of 0.15, a confidence accuracy level of 99 percent, and a statistical power of 95 percent, the required sample size was estimated to be 153 participants. Accordingly, 153 second-cycle secondary school students from Zabol were selected through stratified random sampling. In this procedure, the relevant strata were first identified according to the structure of the accessible school population, and then participants were randomly selected from each stratum in proportion to its size. The inclusion criteria consisted of being enrolled in the second cycle of secondary education, studying in one of the selected schools in Zabol, willingness to participate in the study, and providing informed consent. Students who returned incomplete questionnaires, gave patterned or careless responses, or declined to continue participation were excluded from the final analysis. Participation was voluntary, and all participants were assured that their responses would remain confidential and would be analyzed only at the group level.

2.2. Measures

Data were collected using standardized self-report questionnaires measuring motivational structure, meaning in life, and adolescent high-risk behaviors. To assess motivational structure, the Motivational Structure Questionnaire based on the motivational framework of Cox and Klinger was used. This instrument evaluates the organization, direction, and quality of individuals' motivational system by examining their personal goals, concerns, commitment, perceived control, expected outcomes, emotional investment, and degree of conflict or coherence among motivational tendencies. In the present study, the scale was used to assess the extent to which adolescents' motivational structure reflects adaptive goal orientation, purposeful engagement, perceived attainability of goals, and motivational coherence. Higher scores indicate a more organized, purposeful, and adaptive motivational structure, whereas lower scores indicate motivational instability, conflict, or reduced goal-directed organization. The validity and reliability of this instrument have been supported in previous psychological studies, and in the present study its internal consistency was also evaluated using Cronbach's alpha and composite reliability before testing the structural model.

Meaning in life was measured using the Meaning in Life Questionnaire developed by Steger, Frazier, Oishi, and Kaler. This questionnaire consists of 10 items and assesses two major dimensions of meaning in life: presence of meaning and search for meaning. The presence of meaning dimension evaluates the degree to which individuals perceive their lives as meaningful, purposeful, and coherent, whereas the search for meaning dimension evaluates the extent to which individuals are actively trying to find or deepen meaning in their lives. Items are scored on a seven-point Likert scale ranging from completely untrue to completely true. Higher scores indicate a stronger level of perceived or sought meaning in life, depending on the relevant subscale. In the present study, the total score and subscale scores were used to evaluate adolescents' meaning-related psychological orientation. Previous studies have confirmed the construct validity, convergent validity, discriminant validity, and internal consistency of this questionnaire, and its reliability was re-examined in the

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present sample using Cronbach's alpha and composite reliability.

High-risk behaviors were assessed using the Iranian Adolescents Risk-Taking Scale developed by Zadeh Mohammadi and colleagues. This scale is designed to measure adolescents' tendency toward high-risk behaviors across several behavioral domains, including substance-related behaviors, alcohol use, smoking, violence, unsafe sexual behaviors, relationships with the opposite sex, and dangerous driving. The questionnaire consists of 38 items scored on a five-point Likert scale ranging from completely disagree to completely agree. Higher scores indicate a greater tendency toward high-risk behaviors. The scale provides both a total risk-taking score and domain-specific scores, allowing the researcher to examine the overall level of risky behavior as well as specific behavioral tendencies. The psychometric properties of this scale, including validity and reliability, have been confirmed in previous studies conducted on Iranian adolescent samples. In the present study, the internal consistency of the total scale and its dimensions was examined before conducting the main analyses.

2.3. Data Analysis

Data analysis was conducted in several consecutive stages. First, the collected questionnaires were screened for completeness, response accuracy, and eligibility for statistical analysis. Missing data, univariate and multivariate outliers, and careless response patterns were examined before conducting the main analyses. Descriptive statistics, including mean, standard deviation, minimum, maximum, skewness, and kurtosis, were calculated for all main research variables. The normality of the data was evaluated through skewness and kurtosis indices, and the assumptions required for covariance-based structural equation modeling were examined. The reliability of the instruments was assessed using Cronbach's alpha and composite reliability, and the adequacy of the measurement model was evaluated through confirmatory factor analysis.

The main analytical approach of the study was covariance-based structural equation modeling. CB-SEM was used because the purpose of the study was to test a theoretically specified model explaining the direct effect of motivational structure on adolescents' high-risk behaviors and the indirect effect of motivational structure on high-risk behaviors through meaning in life. In the measurement model, the relationships between observed indicators and latent variables were examined. In the structural model, the direct path from motivational structure to high-risk behaviors, the direct path from motivational structure to meaning in life, the direct path from meaning in life to high-risk behaviors, and the indirect mediating path were tested. Model fit was evaluated using several fit indices, including the chi-square statistic, the chi-square to degrees of freedom ratio, the comparative fit index, the Tucker–Lewis index, the incremental fit index, the root mean square error of approximation, and the standardized root mean square residual. The mediation effect of meaning in life was examined using bootstrapping procedures, and the indirect effect was considered significant when the confidence interval did not include zero. Statistical analyses were performed using SPSS and AMOS software, and the significance level for hypothesis testing was set according to the confidence level defined for the study.

3. Findings and Results

The final sample consisted of 153 students enrolled in the second cycle of secondary education in the city of Zabol. Of the participants, 82 students were female and 71 students were male, representing 53.6 percent and 46.4 percent of the sample, respectively. The age of the participants ranged from 15 to 18 years, with a mean age of 16.43 years and a standard deviation of 0.87. In terms of educational grade, 50 students were studying in the tenth grade, 52 students were studying in the eleventh grade, and 51 students were studying in the twelfth grade. Therefore, the distribution of students across educational grades was relatively balanced. Regarding school type, 79 students were selected from public schools and 74 students from non-public schools. The demographic composition of the sample indicated that the participants represented different gender groups, educational grades, and school contexts within the accessible population of second-cycle secondary school students in Zabol.

Table 1

Descriptive statistics and normality indices of the research variables

Variable	Minimum	Maximum	Mean	Standard Deviation	Skewness	Kurtosis
Motivational structure	62	146	108.64	17.28	-0.34	-0.18

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Goal coherence	18	48	34.91	6.22	-0.29	-0.41
Perceived control and expectancy	15	45	31.76	5.84	-0.21	-0.27
Emotional commitment to goals	17	50	35.48	6.37	-0.38	-0.14
Meaning in life	19	68	45.73	9.41	-0.17	-0.32
Presence of meaning	8	35	23.89	5.72	-0.25	-0.36
Search for meaning	7	35	21.84	5.46	0.11	-0.28
High-risk behaviors	41	151	86.29	21.36	0.46	-0.22
Substance-related risk	8	33	17.62	5.81	0.52	-0.16
Aggressive and violent behaviors	9	37	20.15	6.04	0.39	-0.31
Risky interpersonal behaviors	10	42	23.48	6.76	0.33	-0.25
Dangerous and impulsive behaviors	8	39	25.04	7.19	0.41	-0.19

As shown in Table 1, the mean score of motivational structure was 108.64 with a standard deviation of 17.28, indicating a moderate to relatively favorable level of organized and goal-directed motivation among the adolescents. The mean score of meaning in life was 45.73 with a standard deviation of 9.41, suggesting that the participants generally reported a moderate level of perceived and searched meaning in life. The mean score of high-risk behaviors was 86.29 with a standard deviation of 21.36, showing that risky behavioral tendencies were present at a moderate level in the sample. The skewness and kurtosis values of all variables and subcomponents were within the acceptable range of -2 to +2, indicating that the distribution of the research variables did not show severe deviation from normality. Therefore, the data were considered appropriate for parametric analyses and covariance-based structural equation modeling.

Table 2

Pearson correlation matrix among the main research variables

Variable	1	2	3
1. Motivational structure	1		
2. Meaning in life	0.62**	1	
3. High-risk behaviors	-0.55**	-0.58**	1

The results presented in Table 2 show that motivational structure had a positive and significant relationship with meaning in life. This finding indicates that adolescents with a more coherent, purposeful, and adaptive motivational structure tended to report a stronger sense of meaning in life. In addition, motivational structure had a negative and significant relationship with high-risk behaviors, meaning that students with more organized goals, stronger motivational commitment, and greater perceived control were less likely to report engagement in risky behaviors. Meaning in life also had a negative and significant relationship with high-risk behaviors. This result suggests that adolescents who perceived their lives as more meaningful and purposeful showed lower levels of risk-taking tendencies. Overall, the correlation pattern supported the theoretical basis of the proposed model and provided preliminary evidence for testing the mediating role of meaning in life.

Table 3

Fit indices of the measurement model and structural model

Model	χ^2	df	χ^2/df	CFI	TLI	IFI	RMSEA	SRMR
Measurement model	198.42	132	1.50	0.956	0.947	0.958	0.057	0.050
Structural model	204.86	135	1.52	0.954	0.946	0.956	0.058	0.052

As indicated in Table 3, both the measurement model and the structural model showed acceptable fit to the observed data. The chi-square to degrees of freedom ratio was lower than 3 in both models, indicating an acceptable level of relative model fit. The comparative fit index, Tucker–Lewis index, and incremental fit index were all above 0.90, showing that the proposed models had adequate comparative fit. Furthermore, the root mean square error of approximation and the standardized root mean square residual were below 0.08, confirming that the level of model

E-ISSN: 2980-9681

error was within the acceptable range. These findings demonstrate that the latent variables were adequately represented by their observed indicators and that the proposed structural model provided a suitable explanation of the relationships among motivational structure, meaning in life, and adolescents' high-risk behaviors.

Table 4

Direct, indirect, and total effects in the structural model

Path	Unstandardized coefficient	Standard Error	Critical Ratio	Standardized coefficient	p-value	95% Bootstrap Confidence Interval
Motivational structure → Meaning in life	0.41	0.06	6.83	0.62	<0.001	0.47 to 0.74
Meaning in life → High-risk behaviors	-0.45	0.12	-3.75	-0.39	<0.001	-0.56 to -0.22
Motivational structure → High-risk behaviors	-0.28	0.09	-3.11	-0.31	0.002	-0.49 to -0.12
Indirect effect: Motivational structure → Meaning in life → High-risk behaviors	-0.18	0.05	—	-0.24	0.001	-0.35 to -0.14
Total effect: Motivational structure → High-risk behaviors	-0.46	0.08	—	-0.55	<0.001	-0.67 to -0.41

The results of the path analysis presented in Table 4 indicate that motivational structure had a positive and significant direct effect on meaning in life. This means that adolescents with a more adaptive motivational structure reported higher levels of meaning in life. Meaning in life also had a negative and significant direct effect on high-risk behaviors, showing that a stronger sense of meaning was associated with a lower tendency toward risky behaviors. In addition, motivational structure had a negative and significant direct effect on high-risk behaviors, indicating that adolescents with more coherent goals, stronger motivational organization, and greater perceived control were less likely to engage in high-risk behaviors. The indirect effect of motivational structure on high-risk behaviors through meaning in life was also significant based on the bootstrap confidence interval. Since the confidence interval did not include zero, the mediating role of meaning in life was confirmed. Therefore, motivational structure predicted adolescents' high-risk behaviors both directly and indirectly through meaning in life. The total effect of motivational structure on high-risk behaviors was stronger than its direct effect, indicating that meaning in life explained an important part of the relationship between motivational structure and high-risk behaviors.

Table 5

Explained variance of endogenous variables in the structural model

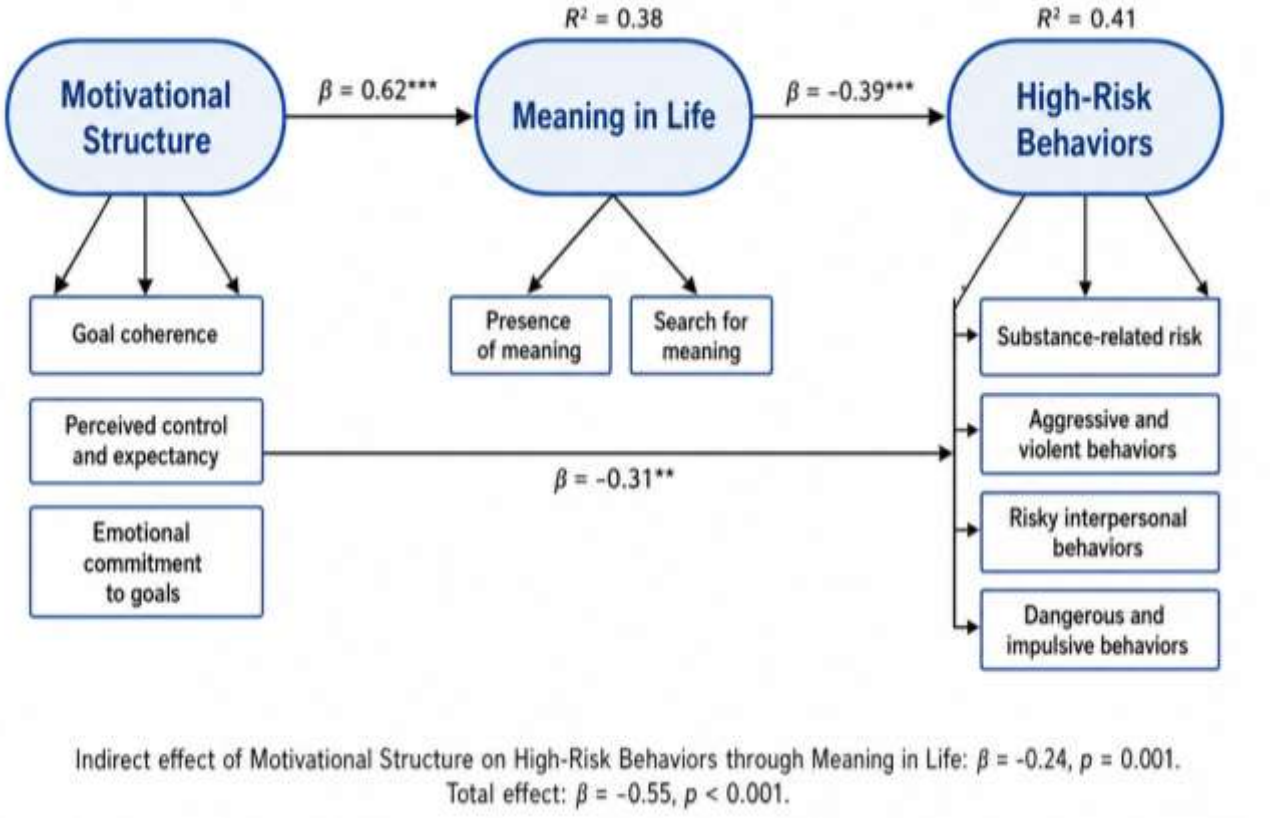
Endogenous variable	Predictor variables	R^2	Adjusted R^2	Interpretation
Meaning in life	Motivational structure	0.38	0.37	Moderate explained variance
High-risk behaviors	Motivational structure and meaning in life	0.41	0.40	Moderate explained variance

As shown in Table 5, motivational structure explained 38 percent of the variance in meaning in life. This finding indicates that adolescents' motivational organization, goal coherence, emotional commitment, and perceived control made a meaningful contribution to explaining differences in their sense of meaning in life. In addition, motivational structure and meaning in life together explained 41 percent of the variance in high-risk behaviors. This level of explained variance suggests that the proposed model had an acceptable explanatory capacity for understanding adolescents' risky behavioral tendencies. In other words, high-risk behaviors among adolescents were meaningfully predicted by both the quality of their motivational structure and the degree to which they experienced their lives as meaningful and purposeful.

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Figure 1

Final structural equation model of the mediating role of meaning in life in the relationship between motivational structure and adolescents' high-risk behaviors



The final structural model showed that motivational structure positively predicted meaning in life and negatively predicted high-risk behaviors. In addition, meaning in life negatively predicted high-risk behaviors and functioned as a significant mediator in the relationship between motivational structure and high-risk behaviors. The standardized direct path from motivational structure to meaning in life was 0.62, indicating a strong positive association between these two constructs. The standardized path from meaning in life to high-risk behaviors was -0.39, showing that greater meaning in life was associated with lower high-risk behavior. The direct path from motivational structure to high-risk behaviors was -0.31, while the indirect path through meaning in life was -0.24. These results indicate partial mediation, because the direct effect of motivational structure on high-risk behaviors remained significant after entering meaning in life into the model. Therefore, the final model supports the assumption that a coherent and adaptive motivational structure may reduce adolescents' tendency toward high-risk behaviors both directly and by strengthening their sense of meaning in life.

4. Discussion and Conclusion

The present study was conducted to test the mediating role of meaning in life in the relationship between motivational structure and high-risk behaviors among adolescents. The findings showed that motivational structure had a positive and significant direct effect on meaning in life, indicating that adolescents with more coherent goals, stronger perceived control, clearer expectancies, and greater emotional commitment to their goals experienced a stronger sense of meaning in life. In addition, meaning in life had a negative and significant direct effect on high-risk behaviors, suggesting that adolescents who perceived their lives as more purposeful and meaningful were less likely to report engagement in risky behaviors. The direct effect of motivational structure on high-risk behaviors was also negative and significant, showing that a more adaptive motivational structure was associated with lower risk-taking tendencies. Most importantly, the indirect effect of motivational structure on high-risk behaviors through

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meaning in life was significant, confirming the mediating role of meaning in life. Therefore, the results support a partial mediation model in which motivational structure reduces high-risk behaviors both directly and indirectly by strengthening adolescents' sense of meaning in life.

The first major finding of the study was that motivational structure positively predicted meaning in life. This result indicates that adolescents who have a more organized system of goals, expectations, and perceived control are more likely to experience their lives as meaningful. From a developmental perspective, adolescence is a period in which individuals begin to construct more stable future goals, personal values, and identity-related commitments. When adolescents perceive that their goals are coherent, attainable, and emotionally significant, their daily experiences become connected to a broader sense of purpose. This finding is consistent with evidence showing that adolescents' future orientation and mental time travel predict meaning in life through self-continuity, because the ability to connect past experiences, present identity, and future possibilities strengthens a coherent sense of personal meaning (Yuan et al., 2024). Similarly, research has shown that social-emotional competence mediates the relationship between perceived social support and meaning in life, indicating that meaning is strengthened when adolescents possess the internal competencies required to organize relationships, regulate emotions, and engage in purposeful functioning (Zhang et al., 2025). The present finding also aligns with research on academic stress, grit, school burnout, and self-compassion, which has shown that adolescents' perseverance and motivational endurance influence their sense of meaning in life under challenging educational conditions (Wang et al., 2024). Therefore, motivational structure appears to provide a psychological foundation for meaning by helping adolescents organize their goals, sustain commitment, and interpret life events in relation to personally valued directions.

The second major finding was that meaning in life negatively predicted high-risk behaviors. This result suggests that adolescents with a stronger sense of meaning are less likely to engage in behaviors that endanger their psychological, social, or physical well-being. Meaning in life may reduce high-risk behaviors by increasing self-worth, strengthening future orientation, improving emotional regulation, and providing adolescents with reasons to avoid harmful behaviors. Adolescents who perceive their lives as purposeful may be more capable of tolerating frustration, resisting impulsive urges, and evaluating risky opportunities in light of longer-term goals. This interpretation is consistent with studies showing that meaning in life is negatively associated with depression among adolescents and that this relationship may operate through cognitive and mindfulness-related processes (Li et al., 2023). It is also consistent with findings that meaning in life plays a protective role in adolescent suicidal ideation and may mediate the effects of basic psychological needs on suicide-related outcomes (Li et al., 2024). In addition, research has shown that meaning in life can moderate the relationship between family functioning and suicidal ideation, suggesting that adolescents with a stronger sense of meaning may be less vulnerable to severe risk outcomes even when exposed to family-related stressors (Yang et al., 2022). The present findings extend this literature by showing that meaning in life is not only related to internalizing symptoms or suicidal ideation, but also to broader high-risk behavioral tendencies.

The negative relationship between meaning in life and high-risk behaviors is also supported by studies on nonsuicidal self-injury and adolescent vulnerability. Prior research has indicated that awe can reduce adolescents' nonsuicidal self-injury urges through the chain-mediating role of meaning in life and ego-depletion, suggesting that meaning may reduce risk by restoring psychological resources and reducing self-regulatory exhaustion (Deng et al., 2025). Other studies have shown that parent-child relationship and educational involvement are associated with adolescent nonsuicidal self-injury through perceived stress and meaning in life, emphasizing that meaning is an important psychological mechanism linking family and educational experiences to risky behavior (Zeng et al., 2023). Similarly, adverse childhood experiences have been associated with depressive symptoms through meaning in life among secondary vocational school students, indicating that meaning can explain how negative developmental experiences are translated into psychological distress (Tang, 2023). These studies support the present result by suggesting that when meaning in life is weakened, adolescents may become more vulnerable to emotional pain, impulsive responses, and maladaptive coping behaviors. Conversely, when meaning in life is strengthened, adolescents may be more capable of resisting behaviors that offer immediate relief but create long-term harm.

The third finding showed that motivational structure had a direct negative effect on high-risk behaviors. This means that adolescents with coherent goals, perceived control, and stronger emotional commitment to adaptive objectives were less likely to report high-risk behaviors. This result can be

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explained by the regulatory function of motivational structure. A coherent motivational system helps adolescents prioritize long-term goals over short-term impulses, evaluate consequences more accurately, and remain committed to adaptive behaviors even under peer pressure, stress, or emotional distress. This finding is in line with studies showing that internet self-control predicts problematic internet use through meaning in life, suggesting that motivational and self-regulatory capacities are central to reducing digital forms of adolescent risk (Wang, Ma, et al., 2023). It is also consistent with evidence that internet adaptability affects internet addiction through meaning in life and anxiety, indicating that adolescents' ability to adaptively regulate their engagement with the online environment depends on both motivational and emotional mechanisms (Wang, Ye, et al., 2023). Research on problematic internet use among Hong Kong adolescents has similarly demonstrated that such behaviors are shaped by multiple psychological predictors, reinforcing the view that adolescent risk-taking should be understood through integrated models of motivation, regulation, and adjustment (Chin & Leung, 2022).

The direct effect of motivational structure on high-risk behaviors may also reflect adolescents' ability to cope with cumulative risk and stressful life experiences. When motivational structure is weak, adolescents may experience confusion, low agency, poor goal commitment, and reduced capacity to delay gratification. These conditions may increase the attractiveness of risky behaviors that provide immediate stimulation, escape, belonging, or emotional relief. Previous research has shown that social problem-solving and coping efficacy mediate the relationship between cumulative risk and adolescent mental health, demonstrating that adolescents' coping-oriented motivational resources play an important role in the impact of risk exposure (Xiong et al., 2021). Studies have also indicated that stressful life events predict nonsuicidal self-injury through depression, while resilience can moderate this pathway (Wei, Wang, et al., 2022). Moreover, gratitude has been found to buffer the effects of stressful life events and deviant peer affiliation on nonsuicidal self-injury, suggesting that positive psychological resources can weaken the link between risk exposure and harmful behavior (Wei, Li, et al., 2022). These findings support the present result by indicating that adolescents' internal motivational and protective resources can reduce the likelihood that stress will be expressed through high-risk behavior.

The most important finding of the present study was the significant mediating role of meaning in life in the relationship between motivational structure and high-risk behaviors. This result indicates that motivational structure reduces risky behaviors partly because it strengthens meaning in life. In other words, adolescents who have clear, coherent, and emotionally valued goals are more likely to perceive their lives as meaningful, and this sense of meaning subsequently reduces their tendency toward risk-taking. The partial mediation pattern is theoretically important because it shows that motivational structure has both a direct regulatory effect and an indirect existential effect. The direct effect may operate through behavioral self-control, perceived agency, and goal commitment, whereas the indirect effect operates through adolescents' experience of purpose, coherence, and significance. This interpretation is consistent with research showing that teacher emotional support influences adolescent burnout through family cohesion and meaning in life, highlighting the mediating role of meaning in developmental and educational adjustment (Li et al., 2026). It also aligns with findings that social support affects depressive symptoms through loneliness and meaning in life, suggesting that meaning is a central explanatory mechanism between contextual resources and adolescent psychological outcomes (Liu et al., 2022). In this regard, the present study contributes to the literature by positioning meaning in life as a bridge between motivational organization and behavioral risk.

The mediating role of meaning in life is also consistent with studies that have examined adolescent risk through indirect psychological pathways. For example, research on bullying victimization has shown that school belonging, self-efficacy, and meaning in life mediate the relationship between victimization and subjective well-being, indicating that meaning helps explain why interpersonal adversity affects adolescent adjustment (Seon & Smith-Adcock, 2021). Research on cyberbullying victimization has also shown that fatalism and self-concept clarity are involved in the relationship between victimization and meaning in life, suggesting that adolescents' self-system and meaning system are closely connected in contexts of social harm (Geng et al., 2021). Similarly, posttraumatic growth and meaning in life have been found to mediate the relationship between adolescent bullying victimization severity and later health outcomes, showing that meaning-related processes may have long-term implications for adjustment after adversity (Ratcliff et al., 2025). The present findings are aligned with these studies because they show that meaning

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in life is not a peripheral variable, but a core psychological mechanism through which motivational and developmental experiences influence behavioral outcomes.

The findings also have implications for understanding high-risk behaviors in digital and social contexts. Adolescents increasingly encounter risky opportunities through online environments, mobile communication, gaming, and peer networks. Prior research has shown that problematic mobile phone use during quarantine was associated with perceived stress through mediated and moderated mechanisms (Jiang & Zhang, 2024). Problematic gaming has also been linked to parenting practices through psychological need satisfaction and frustration (Pivetta et al., 2025), and mobile social media use has been associated with adolescent life satisfaction through mediated pathways (Meng et al., 2023). These studies indicate that high-risk behaviors often emerge when adolescents' psychological needs, self-regulation, and meaning systems are disrupted. The present results add that motivational structure and meaning in life should be considered central constructs in explaining why some adolescents may be more vulnerable to such risky patterns. Adolescents who lack coherent goals and life meaning may be more likely to use digital or interpersonal risk behaviors as substitutes for purpose, belonging, and emotional regulation.

Overall, the findings support a structural model in which motivational structure is a significant predictor of both meaning in life and high-risk behaviors, while meaning in life serves as a significant mediator. These results are consistent with studies showing that meaninglessness is associated with alienation, life dissatisfaction, and depression among high school students (Hou et al., 2025), that stress and quality of life are linked with adolescent self-injury and mental disorders (Győri et al., 2021), and that life stress, depression, hope, optimism, and perceived support shape adolescent vulnerability across different contexts (Nguyễn et al., 2023; Ouyang et al., 2021; Xie et al., 2025). The findings also correspond with evidence that ambivalent attitudes toward life and death are related to suicidal ideation through depression (Toukhy et al., 2024), and that developmental assets can promote positive growth among maltreated adolescents through multiple psychological pathways (Yuan, 2025). Taken together, the present study confirms that adolescent high-risk behaviors should be understood not only as behavioral problems but also as outcomes of motivational disorganization and weakened meaning systems. Strengthening adolescents' goal coherence, perceived control, emotional commitment, and sense of meaning may therefore be essential for reducing risky behavioral tendencies.

The present study had several limitations that should be considered when interpreting the findings. First, the study used a descriptive correlational design, and although structural equation modeling allowed the examination of direct and indirect pathways, causal conclusions cannot be drawn from the data. Second, the sample was limited to second-cycle secondary school students in Zabol, which may restrict the generalizability of the findings to adolescents in other cities, cultural contexts, or educational settings. Third, the data were collected through self-report questionnaires, which may be influenced by social desirability, recall bias, or response style. Fourth, high-risk behaviors are sensitive topics, and some participants may have underreported their actual behavioral tendencies. Finally, the model focused on motivational structure and meaning in life, while other important variables such as peer affiliation, parental monitoring, personality traits, emotional regulation, school climate, and socioeconomic status were not included in the tested model.

Future research should examine the proposed model using longitudinal and experimental designs to clarify the temporal and causal relationships among motivational structure, meaning in life, and high-risk behaviors. It is also recommended that future studies test the model in different regions, age groups, and educational systems in order to compare the stability of the findings across cultural and demographic contexts. Researchers may also expand the model by including additional mediators and moderators such as emotional regulation, resilience, peer pressure, family functioning, school belonging, self-efficacy, and psychological needs. In addition, future studies could analyze specific categories of high-risk behaviors separately, such as substance use, aggression, online risk-taking, self-injury, and risky interpersonal behaviors, in order to determine whether motivational structure and meaning in life have different predictive patterns for different behavioral domains. Mixed-method research could also provide deeper insight into how adolescents personally describe their goals, sources of meaning, and experiences of risk.

The findings of this study have practical implications for school counselors, psychologists, teachers, and educational planners. Interventions designed to reduce adolescent high-risk behaviors should not focus only on warning students about the consequences of risky actions, but should also strengthen their motivational organization and sense of meaning. School-based programs can help adolescents

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clarify personal goals, increase perceived control, develop realistic expectations, and connect academic and social behaviors to meaningful future directions. Counseling interventions may also focus on helping students identify sources of purpose, reconstruct meaning after stressful experiences, and replace risky behaviors with adaptive forms of emotional regulation and goal pursuit. In practice, prevention programs that combine motivational training, meaning-centered counseling, life skills education, and family-school collaboration may be more effective than programs that address risky behaviors only at the behavioral or disciplinary level.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

Acknowledgments

We hereby thank all individuals for participating and cooperating us in this study.

Declaration of Interest

The authors report no conflict of interest.

Funding

According to the authors, this article has no financial support.

Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the study and participated in the research with informed consent.

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E-ISSN: 2980-9681