

Structural Equation Modeling of Adolescent Psychological Well-Being Based on Family Cohesion, Peer Support, and Self-Esteem

Jone. Vakacegu¹, Jessica. Moore^{2*}

¹ Department of Psychology, University of the South Pacific, Suva, Fiji

² Department of Media Psychology, Toronto Metropolitan University, Toronto, Canada

* Corresponding author email address: jessica.moore@torontomu.ca

Article Info

Article type:

Original Research

How to cite this article:

Vakacegu, J., & Moore, J. (2026). Structural Equation Modeling of Adolescent Psychological Well-Being Based on Family Cohesion, Peer Support, and Self-Esteem. *Journal of Adolescent and Youth Psychological Studies*, 7(9), 1-16.
<http://dx.doi.org/10.61838/kman.jayps.6231>



© 2026 the authors. Published by KMAN Publication Inc. (KMANPUB), Ontario, Canada. This is an open access article under the terms of the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) License.

ABSTRACT

Objective: This study aimed to test a structural equation model of adolescent psychological well-being based on family cohesion, peer support, and self-esteem, with particular attention to the direct and indirect effects of family and peer variables through self-esteem.

Methods and Materials: This descriptive-correlational, cross-sectional study was conducted among 512 adolescents aged 13–18 years enrolled in secondary schools in Canada during the 2025–2026 academic year. Participants were selected through multistage cluster sampling. Data were collected using the 42-item Ryff Psychological Well-Being Scale, the Balanced Cohesion Scale of FACES IV, the Friends subscale of the Multidimensional Scale of Perceived Social Support, and the Rosenberg Self-Esteem Scale. Data were analyzed using IBM SPSS Statistics and AMOS. Pearson correlation analysis, confirmatory factor analysis, and structural equation modeling with maximum likelihood estimation were performed. Indirect effects were examined using bias-corrected bootstrapping with 5,000 resamples.

Findings: The structural model demonstrated acceptable fit, $\chi^2/df = 2.36$, CFI = .946, TLI = .940, RMSEA = .052, and SRMR = .045. Family cohesion significantly predicted self-esteem ($\beta = .39, p < .001$) and psychological well-being ($\beta = .22, p < .001$), while peer support significantly predicted self-esteem ($\beta = .34, p < .001$) and psychological well-being ($\beta = .18, p < .001$). Self-esteem had the strongest direct effect on psychological well-being ($\beta = .49, p < .001$). Significant indirect effects on psychological well-being through self-esteem were observed for family cohesion ($\beta = .19, p < .001$) and peer support ($\beta = .17, p < .001$). The model explained 39.8% of the variance in self-esteem and 58.7% of the variance in psychological well-being.

Conclusion: Adolescent psychological well-being is associated with both interpersonal resources and positive self-evaluation, with self-esteem partially mediating the effects of family cohesion and peer support.

Keywords: Psychological well-being, family cohesion, peer support, self-esteem, adolescents, structural equation modeling

1. Introduction

Adolescence is a critical developmental period characterized by substantial biological, cognitive,

emotional, and social changes that shape later psychological functioning and adaptation. During this period, young people are required to negotiate increasing autonomy, changing family relationships, intensified peer involvement,

academic demands, identity development, and greater exposure to social evaluation. These simultaneous transitions can create opportunities for growth while also increasing vulnerability to emotional difficulties when protective resources are insufficient. Psychological well-being therefore represents an important indicator of healthy adolescent development because it extends beyond the absence of psychopathology and encompasses positive functioning, life meaning, self-acceptance, effective relationships, personal growth, and the capacity to manage developmental challenges. Contemporary research increasingly conceptualizes adolescent mental health as a continuum that includes both symptoms of distress and positive dimensions of functioning, emphasizing the importance of identifying factors that promote flourishing rather than focusing exclusively on risk reduction (Kim, 2026; Monika et al., 2023). From this perspective, understanding why some adolescents maintain positive psychological functioning despite developmental pressures requires examination of multiple interconnected personal and social resources rather than isolated risk factors.

Recent research has highlighted the complex and multidetermined nature of adolescent psychological well-being. Reviews of adolescent mental health indicate that emotional difficulties arise from interactions among individual characteristics, family processes, peer experiences, school contexts, and broader social conditions (Lin & Guo, 2024). Socioecological evidence similarly suggests that flourishing and psychological distress among children and adolescents cannot be fully explained at the individual level because family, peer, institutional, and community environments contribute independently and interactively to mental health outcomes (Kim, 2026). Psychological well-being is therefore better understood as emerging from dynamic exchanges between adolescents and their relational environments. This perspective is consistent with evidence showing that social connectedness, perceived belonging, and interpersonal support operate as protective resources across developmental contexts. In a Canadian community sample, perceived belonging was associated with youth mental health during a period of heightened societal disruption, demonstrating the importance of adolescents' subjective sense of connection to others (Brown & Browne, 2024). Likewise, social connection has been linked to lower levels of perceived depression and more favorable indicators of mental well-being among teenagers (Sarwar et al., 2022). These findings underline the need to

investigate relational and intrapersonal resources within a unified explanatory framework.

Family relationships constitute one of the most influential contexts for adolescent psychological development. Although adolescence involves increased independence from parents, the family continues to provide emotional security, behavioral guidance, identity support, and a stable interpersonal environment. Family cohesion refers broadly to the emotional bonding, connectedness, support, and sense of belonging experienced among family members while preserving an appropriate degree of individual autonomy. A cohesive family environment may promote psychological well-being by providing adolescents with reliable emotional resources and a secure context in which developmental challenges can be processed. Studies examining family functioning have consistently found that supportive parent-child relationships and family connectedness are associated with more favorable psychological outcomes. For example, adolescent life satisfaction and mental well-being have been linked to the quality of parent-child relationships, resilience, and self-esteem, suggesting that family relationships contribute to well-being both directly and through personal psychological resources (Dam et al., 2023). Similarly, family cohesion has been associated with behavioral adjustment in young adolescents, although the strength and mechanisms of this association may depend on neighborhood conditions and family characteristics (Sitnik-Warchulska et al., 2025).

The importance of family relationships is further supported by research on attachment and family functioning. Secure attachment appears to strengthen family relationships and reduce problematic peer experiences, with positive childhood experiences functioning as an important explanatory mechanism (Çiçek et al., 2025). Among adolescents who have experienced parental divorce, maternal and paternal attachment remain relevant to subjective well-being, demonstrating that the psychological quality of family bonds may remain influential even under conditions of family restructuring (Tay-Karapas et al., 2025). Longitudinal work has also shown that parental trust predicts aspects of adolescents' self-concept, indicating that the family context contributes not only to immediate emotional adjustment but also to the development of relatively stable self-evaluative processes (Esnaola et al., 2025). Related evidence suggests that perceived family cohesion is associated with self-esteem and emotional outcomes in emerging developmental periods, with self-esteem serving as an important mediator between family

functioning and psychological adjustment (Németh & Bernáth, 2022). Thus, family cohesion may contribute to adolescent psychological well-being through both direct emotional support and indirect pathways involving the development of a more secure and positive sense of self.

At the same time, adolescence is marked by an expansion of the social world beyond the family, making peer relationships increasingly central to daily emotional experience and identity formation. Peer support may provide companionship, validation, emotional understanding, instrumental assistance, and opportunities for social learning. Supportive peer relationships can also protect adolescents against feelings of isolation and contribute to a stronger sense of social belonging. Research comparing sources of support suggests that parents, teachers, and peers each contribute differently to student well-being, emphasizing that peer support represents a distinct rather than redundant source of psychological protection (Hoferichter et al., 2021). Similarly, evidence examining the relative importance of parents, teachers, and peers indicates that multiple sources of social support contribute to adolescent well-being, although their effects may differ in magnitude and developmental meaning (Fino et al., 2023). Positive peer relationships during adolescence may also have long-term implications, as perceived peer relationship quality has been associated with loneliness in later developmental and occupational contexts (Chiao & Chyu, 2022). These findings suggest that peer support may be an important proximal predictor of adolescent well-being.

The protective role of peer connectedness becomes particularly evident when adolescents encounter social adversity. Peer bullying, exclusion, and victimization have consistently been associated with poorer psychological outcomes, whereas supportive peer relationships may buffer some of these effects. Socioeconomic disadvantage can increase exposure to peer bullying through multiple pathways, illustrating how broader structural vulnerability may affect well-being partly through peer processes (Runions et al., 2024). Longitudinal research has also demonstrated that bullying trajectories from childhood through adolescence are associated with later mental health outcomes, including among both autistic and neurotypical youth (Deniz et al., 2026). Related work on sibling bullying has shown that adverse interpersonal experiences within close relationships can have meaningful consequences for positive and negative mental health during adolescence (Toseeb & Wolke, 2021). Among autistic adolescents, self-esteem has been identified as an important psychological

factor in the association between sibling bullying and mental health, reinforcing the idea that social experiences may affect adjustment through self-evaluative processes (Deniz & Toseeb, 2023). Research on victimized adolescents more broadly has further demonstrated that positive well-being and resilience can coexist with adversity when protective factors are available across development (Armitage et al., 2021).

Peer relationships may therefore operate not only as direct social resources but also as environments in which adolescents develop beliefs about themselves. Positive peer feedback, acceptance, trust, and inclusion can reinforce feelings of personal worth, whereas rejection or alienation may undermine self-evaluation. Evidence from adolescent and youth samples indicates that the associations among self-esteem, peer relationships, and mental well-being may also vary according to broader identity contexts, demonstrating that these constructs are interconnected within complex developmental systems (Mussina & Lawrence, 2026). Among rural adolescents, belief in others has been associated with social anxiety through self-esteem, with gender further moderating aspects of this process (Saiding et al., 2025). Peer attachment and self-esteem have also been shown to mediate the relationship between family functioning and social anxiety, supporting the possibility that family, peer, and self-related processes operate sequentially or jointly rather than independently (Ying et al., 2022). Furthermore, alienation from parents or peers has been associated with life satisfaction through resilience and self-concept clarity, suggesting that relational disconnection may undermine well-being partly through disruptions in internal psychological organization (Chen et al., 2022).

Self-esteem is particularly relevant within this relational-developmental framework. It reflects an individual's general evaluation of personal worth and adequacy and is shaped through repeated social experiences, perceived competence, interpersonal feedback, and internalized beliefs about the self. Adolescence is an especially important period for the development of self-esteem because young people become increasingly sensitive to peer evaluation, social comparison, achievement feedback, and emerging identity commitments. Higher self-esteem has been associated with greater psychological well-being among adolescents, supporting its role as a central intrapersonal resource (Enwere & Iloakasia, 2024). Research also suggests that self-esteem can mediate the relationship between family functioning and mental health. For example, family functioning has been linked to adolescent depression through self-esteem and peer

relationships, indicating that individual self-evaluation may serve as a bridge between relational environments and emotional outcomes (Huang et al., 2022). Similarly, self-esteem has been shown to mediate the relationship between family function and anxiety symptomatology in adolescents, further demonstrating its potential explanatory role within family-based developmental pathways (Farmakopoulou et al., 2024).

The broader literature on positive adolescent development also supports the importance of self-related and relational resources. Prosocial behavior has been associated with youth mental health in ways that emphasize reciprocal connections between social functioning and psychological adjustment (Hirani et al., 2022). Adolescents' participation in interpersonal and community-oriented activities may also influence both intrapersonal and interpersonal outcomes, demonstrating how social engagement can strengthen psychological resources (Nedungadi et al., 2023). Personal relationships more generally have been identified as important determinants of both physical and mental health in young people, suggesting that relationship quality should be considered a core dimension of adolescent health research (Kanth, 2022). Longitudinal structural equation research has further shown that both individual and social factors contribute to adolescents' self-determination, providing methodological and conceptual support for models that examine multiple pathways simultaneously (Kassis et al., 2023). Within such models, self-esteem may function as a particularly important mechanism linking adolescents' social contexts to broader indicators of psychological well-being.

An ecological perspective further suggests that family cohesion, peer support, and self-esteem should not be treated as isolated predictors. Adolescents are embedded within overlapping social systems, and experiences within one domain can influence functioning in another. Social-environmental factors have been associated with psychosomatic health among adolescents, demonstrating the importance of analyzing family and peer conditions within an integrated ecological framework (Huang et al., 2023). School, family, and peer connectedness have also been identified as protective factors against depression and suicide risk, reinforcing the importance of multiple forms of social connectedness for adolescent adjustment (Ruiz et al., 2025). Research on psychological and social adjustment similarly indicates that current relational and emotional functioning can shape adolescents' expectations for the future, suggesting that well-being has developmental implications extending beyond immediate mental health

(Verdugo & Sánchez-Sandoval, 2022). Such findings support models in which relational resources influence well-being both directly and through internal psychological mechanisms.

Contemporary research also emphasizes that psychological well-being depends on adolescents' capacity to regulate emotions and cognitively process stressful experiences. Integrative evidence on emotion regulation and subjective well-being indicates that adaptive regulation processes are central to adolescent adjustment and are closely linked to interpersonal and self-related factors (Jiang, 2026). Academic and cultural pressures can contribute to psychological detachment and stress, whereas coping resources may protect against these effects (Chen et al., 2025). Similarly, adverse interpersonal experiences such as bullying victimization can increase severe psychological risks, while resilience and help-seeking processes may influence outcomes (Ge, 2025). These findings suggest that psychological well-being emerges from a broader regulatory system in which supportive relationships and positive self-appraisals may provide resources for managing emotional challenges. Family cohesion may offer emotional security, peer support may provide interpersonal validation, and self-esteem may strengthen confidence in one's ability to cope with developmental demands.

The social meaning of support may also depend on whether adolescents experience acceptance within their broader environments. Reactions to identity disclosure, for example, can substantially shape the mental health of sexual and gender diverse youth in school settings, illustrating how interpersonal affirmation or rejection can influence psychological outcomes (Sherwood, 2026). Such findings reinforce the general principle that perceived acceptance and belonging are central components of adolescent well-being. The significance of these relational processes is also consistent with evidence indicating that supportive environments influence self-concept and psychological functioning across different cultural contexts. Although developmental pathways may vary between populations, the recurring association of connectedness, self-evaluation, and mental health suggests that family cohesion, peer support, and self-esteem are theoretically suitable components of an integrated structural model.

Despite the substantial literature on these constructs, several limitations remain. Many studies have examined family functioning, peer support, self-esteem, or psychological well-being separately, while others have focused primarily on negative outcomes such as depression,

anxiety, bullying, loneliness, or social withdrawal. This emphasis provides valuable information regarding risk but offers a less complete account of positive psychological functioning. Furthermore, although mediation studies have demonstrated that self-esteem can transmit the effects of family and peer experiences to various mental health outcomes, fewer studies have simultaneously modeled family cohesion, peer support, self-esteem, and multidimensional psychological well-being within a single structural framework. The use of structural equation modeling is particularly valuable because it permits simultaneous estimation of multiple direct and indirect relationships while accounting for measurement error and evaluating the overall plausibility of the proposed theoretical structure. Such an approach is consistent with increasingly integrative models of adolescent development and can clarify whether family cohesion and peer support contribute to psychological well-being independently, indirectly through self-esteem, or through both pathways.

The Canadian adolescent context provides an especially relevant setting for such investigation because young people develop within diverse family, school, cultural, and peer environments, while recent evidence from Canadian youth has underscored the importance of belonging and social connectedness for mental health (Brown & Browne, 2024). At the same time, developmental research indicates that relational resources may not exert identical effects for all adolescents and can interact with identity, adversity, and social context (Mussina & Lawrence, 2026; Sherwood, 2026). Accordingly, examining the structural relationships among family cohesion, peer support, self-esteem, and psychological well-being can contribute to a more integrated understanding of how interpersonal and intrapersonal resources jointly support positive adolescent development.

The aim of the present study was to test a structural equation model of adolescent psychological well-being based on family cohesion, peer support, and self-esteem, including the direct effects of family cohesion and peer support on psychological well-being and their indirect effects through self-esteem.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a descriptive-correlational, cross-sectional design using structural equation modeling (SEM) to examine the relationships among family cohesion, peer support, self-esteem, and psychological well-being in

adolescents. The statistical population consisted of adolescents enrolled in secondary schools in Canada during the 2025–2026 academic year. A total of 512 adolescents were recruited from public secondary schools through multistage cluster sampling. First, several school districts were selected from urban and suburban areas, followed by the random selection of schools within the participating districts and classes within each school. Students who met the eligibility criteria were invited to participate until the required sample size was achieved. The participants were between 13 and 18 years of age and represented Grades 8 through 12. The sample size was considered adequate for structural equation modeling because it provided sufficient observations relative to the number of estimated parameters and allowed stable estimation of the measurement and structural models. Inclusion criteria were being between 13 and 18 years of age, current enrollment in a participating secondary school, sufficient English proficiency to understand the questionnaires, provision of adolescent assent, and provision of parental or guardian consent for participants below the age at which independent consent was permitted under the applicable institutional requirements. Adolescents were excluded if they submitted substantially incomplete questionnaires or demonstrated response patterns indicating that the questionnaires had not been completed attentively. Participation was voluntary, and students were informed that they could discontinue their participation at any stage without penalty. Questionnaires were administered in a quiet classroom setting under standardized conditions, and no personally identifying information was included in the research dataset. Participants were informed about the purpose of the study, confidentiality of responses, and use of the collected data exclusively for research purposes. The study procedures were conducted in accordance with established ethical principles for research involving adolescents, including confidentiality, voluntary participation, informed consent, and protection of participants' privacy.

2.2. Measures

Psychological well-being was assessed using the Ryff Psychological Well-Being Scale, originally developed by Carol Ryff to assess positive psychological functioning rather than merely the absence of psychological distress. The scale conceptualizes psychological well-being as a multidimensional construct comprising autonomy, environmental mastery, personal growth, positive relations

with others, purpose in life, and self-acceptance. The 42-item version of the instrument was used in the present study, with seven items representing each dimension. Participants indicated the extent to which they agreed or disagreed with each statement on a six-point Likert-type response scale ranging from strong disagreement to strong agreement. Negatively worded items were reverse-scored before calculation of the scores. Higher total scores indicated higher levels of psychological well-being. The multidimensional structure of the instrument permits assessment of both overall psychological well-being and its specific dimensions. Previous research has demonstrated acceptable internal consistency, construct validity, and convergent validity for the Ryff Psychological Well-Being Scale in adolescent and young populations. In the present study, the total psychological well-being score was used as the principal endogenous construct in the structural model, while the measurement properties of the instrument were evaluated before testing the hypothesized structural relationships.

Family cohesion was measured using the cohesion dimension of the Family Adaptability and Cohesion Evaluation Scales IV (FACES IV), developed by Olson and colleagues within the Circumplex Model of Marital and Family Systems. FACES IV was designed to assess central dimensions of family functioning, particularly family cohesion and flexibility. The balanced cohesion scale consists of seven items assessing the degree of emotional bonding, closeness, involvement, support, and connectedness among family members while maintaining an appropriate level of individual autonomy. Respondents rated the extent to which each statement described their family using a five-point Likert-type scale ranging from strongly disagree to strongly agree. Item scores were summed according to the scoring procedure of the instrument, with higher scores on the balanced cohesion dimension indicating greater perceived family connectedness and healthier family cohesion. FACES IV and its cohesion dimension have demonstrated satisfactory reliability, factorial validity, and construct validity across family and adolescent samples. In the present study, family cohesion was treated as an exogenous latent construct representing adolescents' perceptions of emotional bonding and supportive interaction within their families.

Peer support was assessed using the Friends subscale of the Multidimensional Scale of Perceived Social Support (MSPSS), developed by Zimet and colleagues. The MSPSS is a 12-item self-report measure assessing perceived social

support from three sources: family, friends, and a significant other. For the purposes of the present study, the four-item Friends subscale was used to operationalize peer support because it specifically evaluates adolescents' perceptions of the availability, emotional responsiveness, and helpfulness of their friends. Items are rated on a seven-point Likert-type scale ranging from very strongly disagree to very strongly agree. The four relevant items are summed or averaged to generate the peer-support score, with higher scores indicating greater perceived support from peers. The MSPSS has been extensively employed in adolescent and young-adult populations and has demonstrated strong internal consistency, factorial validity, convergent validity, and stability across different cultural settings. In the proposed structural model, peer support was considered an exogenous construct reflecting adolescents' perceptions that peers were available to provide emotional assistance, understanding and support when needed.

Self-esteem was measured using the Rosenberg Self-Esteem Scale, developed by Morris Rosenberg in 1965. The scale is one of the most widely used instruments for assessing global self-worth and consists of 10 items addressing positive and negative evaluations of the self. Participants responded to each item using a four-point Likert-type scale ranging from strongly disagree to strongly agree. Five negatively worded items were reverse-scored before calculating the total score so that higher scores consistently represented higher levels of self-esteem. After appropriate reverse scoring, the item scores were combined to obtain an overall measure of global self-esteem. The Rosenberg Self-Esteem Scale has demonstrated favorable psychometric characteristics in adolescent populations, including satisfactory internal consistency, test-retest reliability, convergent validity, and construct validity. In this study, self-esteem was incorporated into the structural equation model as an endogenous psychological construct predicted by adolescents' family and peer relationships and associated with their psychological well-being.

2.3. Data Analysis

Data were analyzed using IBM SPSS Statistics and AMOS. Prior to hypothesis testing, the dataset was screened for data-entry errors, missing values, univariate and multivariate outliers, and violations of the assumptions required for multivariate analysis. Descriptive statistics, including mean, standard deviation, minimum, maximum, skewness, and kurtosis, were calculated for the principal

study variables. The pattern and extent of missing data were examined before model estimation, and cases with substantial questionnaire incompleteness were excluded in accordance with the predetermined eligibility criteria. Univariate normality was evaluated using skewness and kurtosis indices, while multivariate outliers were examined using Mahalanobis distance. Potential multicollinearity among predictor variables was assessed through intercorrelations, tolerance values, and variance inflation factors. Internal consistency of the measurement instruments was evaluated using Cronbach's alpha coefficients. Pearson correlation coefficients were calculated as a preliminary analysis to determine the direction and magnitude of the bivariate associations among family cohesion, peer support, self-esteem, and psychological well-being.

Structural equation modeling was subsequently conducted using the maximum likelihood estimation method. The analysis followed a two-stage procedure. First, the measurement model was evaluated using confirmatory factor analysis to determine whether the observed indicators adequately represented their corresponding latent constructs. Factor loadings, construct reliability, and convergent and discriminant validity were examined before evaluation of the structural model. Standardized factor loadings of approximately .50 or greater were considered acceptable, while composite reliability values of .70 or higher and average variance extracted values of .50 or higher were used as indicators of satisfactory construct reliability and convergent validity. After establishing an acceptable measurement model, the hypothesized structural model was tested to estimate the direct relationships of family cohesion, peer support, and self-esteem with adolescent psychological well-being, as well as the relationships of family cohesion and peer support with self-esteem. Model adequacy was evaluated using multiple goodness-of-fit indices rather than relying exclusively on the chi-square statistic. These included the chi-square to degrees-of-freedom ratio (χ^2/df), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). Values of χ^2/df below 3, CFI and TLI values of .90 or greater, and RMSEA and SRMR values below .08 were interpreted as

evidence of acceptable model fit. Standardized path coefficients (β), critical ratios, and corresponding probability values were reported for the structural relationships. Indirect effects involving self-esteem were additionally evaluated using a bias-corrected bootstrap procedure with 5,000 resamples and 95% confidence intervals; an indirect effect was considered statistically significant when its confidence interval did not include zero. The proportion of variance explained in endogenous variables was reported using squared multiple correlations (R^2). Statistical significance was evaluated at the .05 level, and all analyses were conducted after confirming that the data met the assumptions required for structural equation modeling.

3. Findings and Results

A total of 512 adolescents were included in the final statistical analyses. Participants ranged in age from 13 to 18 years, with a mean age of 15.47 years ($SD = 1.42$). Of the total sample, 263 participants (51.37%) were girls and 249 (48.63%) were boys. Regarding school grade, 91 adolescents (17.77%) were enrolled in Grade 8, 103 (20.12%) in Grade 9, 112 (21.88%) in Grade 10, 109 (21.29%) in Grade 11, and 97 (18.95%) in Grade 12. Most participants reported living with two parents or parental figures ($n = 374$, 73.05%), whereas 102 adolescents (19.92%) lived primarily with one parent and 36 (7.03%) reported another family living arrangement. In terms of number of siblings, 76 participants (14.84%) were only children, 211 (41.21%) had one sibling, 157 (30.66%) had two siblings, and 68 (13.28%) had three or more siblings. Examination of the questionnaires showed a low proportion of missing responses, and no case retained in the final dataset exceeded the predetermined threshold for questionnaire incompleteness. Preliminary screening further indicated no substantial data-entry errors or implausible response values. The demographic distribution therefore indicated that the analytical sample included adolescents from different stages of secondary education and a range of family compositions, providing sufficient variability for examination of the hypothesized structural relationships.

Table 1

Descriptive Statistics and Correlations Among the Main Study Variables (N = 512)

Variable	M	SD	Minimum	Maximum	Skewness	Kurtosis	1	2	3	4
1. Family cohesion	25.84	4.63	11.00	35.00	-0.31	-0.18	—			

2. Peer support	21.76	4.18	7.00	28.00	-0.42	-0.11	.46***	—		
3. Self-esteem	30.91	5.27	14.00	40.00	-0.36	-0.24	.52***	.48***	—	
4. Psychological well-being	191.63	25.74	112.00	244.00	-0.28	-0.19	.57***	.51***	.68***	—

Table 1 presents the descriptive characteristics and bivariate relationships among family cohesion, peer support, self-esteem, and psychological well-being. The mean family cohesion score was 25.84 (SD = 4.63), while the mean peer support score was 21.76 (SD = 4.18). Participants obtained a mean self-esteem score of 30.91 (SD = 5.27), and the mean psychological well-being score was 191.63 (SD = 25.74). Skewness values ranged from -0.42 to -0.28, and kurtosis values ranged from -0.24 to -0.11, suggesting that the distributions of all principal variables were approximately symmetric and did not demonstrate substantial departures from univariate normality. All correlations were positive and statistically significant at $p < .001$. Family cohesion was moderately associated with peer support ($r = .46$), self-esteem ($r = .52$), and psychological well-being ($r = .57$). Peer support was positively correlated with self-esteem ($r = .48$) and psychological well-being ($r = .51$). The strongest

bivariate association was observed between self-esteem and psychological well-being ($r = .68$), indicating that adolescents reporting greater global self-worth also tended to report substantially higher levels of psychological well-being. Although the correlations were sufficiently strong to support examination of the hypothesized structural relationships, none approached a magnitude indicative of problematic redundancy among the constructs. Evaluation of multicollinearity similarly showed acceptable tolerance and variance inflation factor values, with VIF values ranging from 1.38 to 1.67. Mahalanobis distance was used to examine multivariate outliers, and no retained case demonstrated an extreme multivariate pattern warranting exclusion. These preliminary results supported proceeding to confirmatory factor analysis and structural equation modeling.

Table 2

Confirmatory Factor Analysis, Internal Consistency, and Convergent Validity of the Measurement Model

Construct	Number of indicators/items used in model	Standardized factor loading range	Cronbach's α	Composite reliability	AVE
Family cohesion	7	.63–.82	.86	.87	.50
Peer support	4	.72–.88	.88	.89	.67
Self-esteem	10	.61–.84	.90	.91	.51
Psychological well-being	6 dimensional indicators	.66–.85	.92	.92	.66

Table 2 summarizes the results of the confirmatory factor analysis and assessment of construct reliability and convergent validity. All retained standardized factor loadings were statistically significant at $p < .001$ and exceeded the minimum acceptable level of approximately .50. Standardized loadings for family cohesion ranged from .63 to .82, while the four peer-support indicators demonstrated loadings ranging from .72 to .88. Standardized loadings for self-esteem ranged from .61 to .84. For psychological well-being, the six theoretically defined dimensions of autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance were modeled as indicators of the broader psychological well-being construct, with standardized factor loadings ranging from .66 to .85. Internal consistency was satisfactory to excellent across all constructs. Cronbach's alpha coefficients ranged from .86 for family cohesion to .92

for psychological well-being, while composite reliability coefficients ranged from .87 to .92. Average variance extracted values were .50 for family cohesion, .67 for peer support, .51 for self-esteem, and .66 for psychological well-being, meeting or exceeding the generally accepted .50 threshold for convergent validity. The measurement model therefore provided evidence that the observed indicators adequately represented their intended latent variables. Examination of discriminant validity further indicated that the constructs remained empirically distinguishable, as interconstruct correlations were below the level that would suggest excessive overlap and the square roots of the AVE values were larger than the corresponding interconstruct correlations. These findings supported the adequacy of the measurement component of the proposed structural equation model.

Table 3

Goodness-of-Fit Indices for the Measurement and Structural Models

Model	χ^2	df	χ^2/df	CFI	TLI	RMSEA	90% CI for RMSEA	SRMR
Measurement model	612.47***	263	2.33	.948	.941	.051	.046–.056	.043
Structural model	628.31***	266	2.36	.946	.940	.052	.047–.057	.045

As shown in Table 3, both the measurement model and the hypothesized structural model demonstrated satisfactory fit to the observed data. The confirmatory measurement model yielded $\chi^2(263) = 612.47, p < .001$, with a χ^2/df ratio of 2.33. Although the chi-square statistic was statistically significant, which is common in structural equation models with moderately large samples, the remaining fit indices consistently indicated good model fit. The CFI was .948 and the TLI was .941, both exceeding the conventional .90 criterion and approaching the more stringent .95 benchmark. The RMSEA was .051, with a 90% confidence interval ranging from .046 to .056, while the SRMR was .043. The structural model produced highly comparable results, $\chi^2(266) = 628.31, p < .001$, $\chi^2/df = 2.36$, CFI = .946, TLI =

.940, RMSEA = .052, 90% CI [.047, .057], and SRMR = .045. Taken together, the χ^2/df values below 3, CFI and TLI values above .90, and RMSEA and SRMR values substantially below .08 demonstrated that the specified model reproduced the observed covariance structure with acceptable precision. The relatively small differences between the measurement and structural models additionally indicated that imposing the hypothesized directional relationships among family cohesion, peer support, self-esteem, and psychological well-being did not produce a meaningful deterioration in model fit. Accordingly, the proposed structural model was considered suitable for interpretation of direct and indirect path coefficients.

Table 4

Standardized Direct and Indirect Effects in the Structural Equation Model

Structural relationship	B	SE	β	CR	p	95% bootstrap CI
Family cohesion → Self-esteem	0.47	0.05	.39	9.27	<.001	.31 to .47
Peer support → Self-esteem	0.43	0.05	.34	8.11	<.001	.26 to .42
Family cohesion → Psychological well-being	1.29	0.26	.22	4.96	<.001	.14 to .30
Peer support → Psychological well-being	1.12	0.27	.18	4.17	<.001	.10 to .26
Self-esteem → Psychological well-being	2.41	0.21	.49	11.48	<.001	.41 to .57
Family cohesion → Self-esteem → Psychological well-being	—	—	.19	—	<.001	.14 to .25
Peer support → Self-esteem → Psychological well-being	—	—	.17	—	<.001	.12 to .22

Table 4 presents the standardized direct and indirect effects estimated in the final structural model. Family cohesion had a statistically significant positive direct effect on self-esteem ($\beta = .39, p < .001$), indicating that adolescents who perceived stronger emotional bonding, connectedness, and supportive family relationships tended to report higher global self-esteem. Peer support also demonstrated a significant positive effect on self-esteem ($\beta = .34, p < .001$), suggesting that greater perceived availability and responsiveness of friends was associated with more favorable evaluations of the self. Together, family cohesion and peer support explained 39.8% of the variance in adolescent self-esteem ($R^2 = .398$). With respect to psychological well-being, self-esteem emerged as the strongest direct predictor ($\beta = .49, p < .001$). Family

cohesion also exerted a significant direct positive effect on psychological well-being ($\beta = .22, p < .001$), as did peer support ($\beta = .18, p < .001$). Thus, even after accounting for self-esteem, adolescents perceiving stronger cohesion within their families and greater support from peers reported higher levels of psychological well-being. The complete structural model explained 58.7% of the variance in psychological well-being ($R^2 = .587$), indicating substantial explanatory capacity for the combination of familial, peer, and self-evaluative factors included in the model.

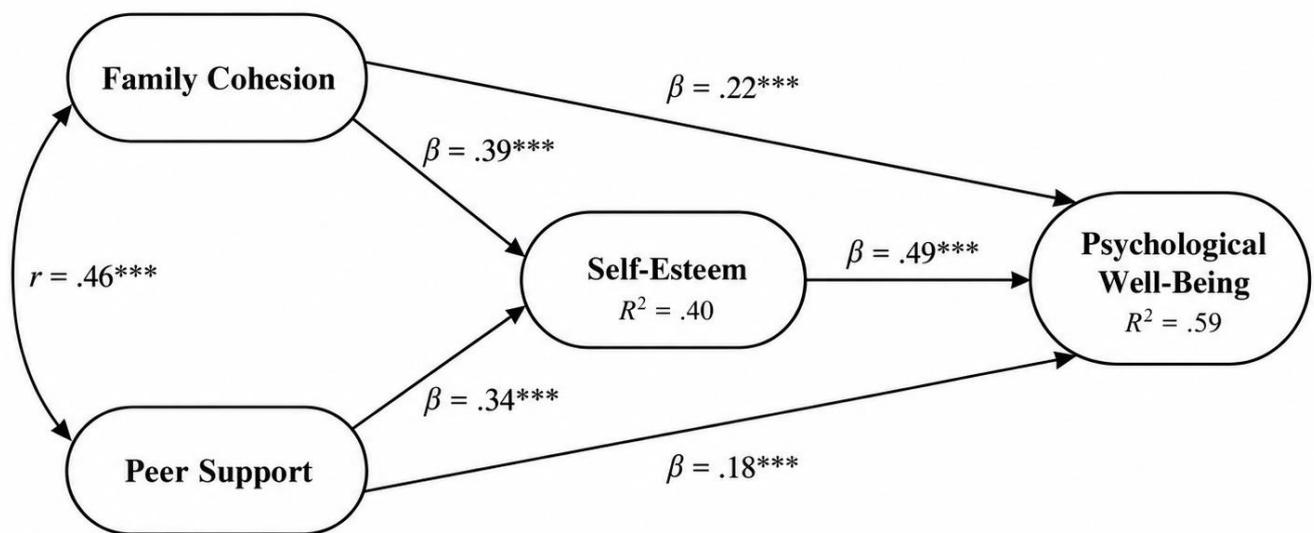
The bootstrap analysis additionally demonstrated statistically significant indirect pathways through self-esteem. The standardized indirect effect of family cohesion on psychological well-being through self-esteem was $\beta = .19$, with a bias-corrected 95% bootstrap confidence interval

from .14 to .25. Because this interval did not contain zero, the indirect effect was statistically significant. Similarly, peer support had a significant indirect effect on psychological well-being through self-esteem ($\beta = .17$, 95% CI [.12, .22], $p < .001$). The persistence of significant direct effects from both family cohesion and peer support to psychological well-being after inclusion of self-esteem indicated partial rather than complete mediation. The total standardized effect of family cohesion on psychological well-being was therefore .41, comprising its direct effect of .22 and indirect effect of .19, while the total standardized

effect of peer support was .35, comprising its direct effect of .18 and indirect effect of .17. These findings indicate that supportive family and peer environments were associated with adolescent psychological well-being through both direct pathways and an additional psychological pathway involving enhanced self-esteem. Among the variables included in the model, self-esteem represented the most proximal and strongest direct psychological correlate of well-being, while family cohesion showed a somewhat stronger overall relationship with psychological well-being than peer support.

Figure 1

Structural Equation Model of the Relationships Among Family Cohesion, Peer Support, Self-Esteem, and Adolescent Psychological Well-Being



The final structural model indicated a coherent pattern of statistically significant relationships among the four study constructs. Family cohesion and peer support both positively predicted self-esteem, and all three predictors were positively associated with psychological well-being. The strongest structural pathway was observed from self-esteem to psychological well-being ($\beta = .49$, $p < .001$), followed by the pathway from family cohesion to self-esteem ($\beta = .39$, $p < .001$) and the pathway from peer support to self-esteem ($\beta = .34$, $p < .001$). Direct pathways from family cohesion and peer support to psychological well-being remained statistically significant, with coefficients of $\beta = .22$ and $\beta = .18$, respectively. The figure therefore illustrates that

adolescent psychological well-being was not associated exclusively with interpersonal environmental resources or exclusively with individual self-evaluation; rather, the model supported an integrated pattern in which family and peer relationships were associated with well-being both independently and through adolescents' self-esteem. The significant indirect effects further demonstrated that part of the association of family cohesion and peer support with psychological well-being operated through more positive self-evaluation. Overall, the final model accounted for approximately 40% of the variance in self-esteem and approximately 59% of the variance in psychological well-being, while all hypothesized structural coefficients were

statistically significant and in the expected positive direction.

4. Discussion

The present study examined a structural equation model of adolescent psychological well-being based on family cohesion, peer support, and self-esteem. The findings supported the proposed model and demonstrated that all three variables were significantly and positively associated with psychological well-being. Family cohesion and peer support both had significant direct effects on self-esteem, while self-esteem showed the strongest direct effect on psychological well-being. In addition, family cohesion and peer support retained significant direct effects on psychological well-being after self-esteem was entered into the model, indicating partial mediation. The model explained 39.8% of the variance in self-esteem and 58.7% of the variance in psychological well-being, suggesting that the combination of interpersonal and intrapersonal resources accounted for a substantial proportion of differences in adolescents' positive psychological functioning. These findings support a developmental and socioecological interpretation of adolescent well-being in which supportive family and peer relationships contribute not only directly to positive functioning but also indirectly by strengthening adolescents' evaluations of their own worth.

One of the central findings was the significant positive direct effect of family cohesion on psychological well-being. Adolescents who perceived greater emotional closeness, support, connectedness, and mutual involvement within their families reported higher levels of psychological well-being. This result is consistent with previous evidence indicating that the quality of family relationships is closely associated with life satisfaction, emotional adjustment, and positive mental health during adolescence (Dam et al., 2023). Family cohesion may provide adolescents with a reliable psychological base from which they can manage academic demands, developmental transitions, and interpersonal stressors. When young people perceive their families as emotionally available and supportive, they may experience stronger feelings of security, acceptance, and belonging, all of which are compatible with higher self-acceptance, more positive relationships, greater purpose, and better environmental mastery. Similar patterns have been documented in research showing that family cohesion is associated with fewer behavioral problems and more favorable adjustment among young adolescents (Sitnik-

Warchulska et al., 2025). The present findings therefore extend earlier work by showing that family cohesion is related not only to reduced difficulties but also to a broader positive construct of psychological well-being.

The positive relationship between family cohesion and psychological well-being can also be interpreted through attachment and family systems perspectives. Secure and emotionally responsive family relationships provide a context in which adolescents can explore increasing autonomy without losing a sense of interpersonal security. Findings concerning secure attachment, positive childhood experiences, and family relationships suggest that emotionally supportive family environments are associated with healthier developmental outcomes and reduced interpersonal difficulties (Çiçek et al., 2025). Likewise, maternal and paternal attachment have been found to predict subjective well-being among adolescents, including those exposed to family transitions such as parental divorce (Tay-Karapas et al., 2025). These studies support the present finding that the subjective quality of family relationships may remain highly relevant even as adolescents increasingly orient toward peers. Rather than becoming psychologically unimportant during adolescence, cohesive family relationships may continue to function as a stable emotional resource that supports positive development.

The findings further showed that family cohesion significantly predicted self-esteem, with a standardized direct effect of $\beta = .39$. This suggests that family relationships may influence adolescents' psychological well-being partly through the internalization of positive self-evaluations. Adolescents who experience warmth, acceptance, cohesion, and dependable support within the family may be more likely to perceive themselves as worthy, competent, and valued. This interpretation is consistent with longitudinal evidence indicating that parental trust contributes to the development of adolescents' self-concept (Esnaola et al., 2025). It also accords with findings showing that family cohesion is associated with self-esteem and that self-esteem may mediate the relationship between family functioning and emotional outcomes (Németh & Bernáth, 2022). The family therefore appears to operate not only as a direct source of emotional support but also as an interpersonal context in which adolescents construct and reinforce beliefs about their own value.

Another important result was the significant direct effect of peer support on psychological well-being. Adolescents who reported stronger perceived support from friends also reported better psychological well-being. This finding is

consistent with the developmental transition of adolescence, during which peers become increasingly important sources of companionship, emotional validation, advice, and identity feedback. Research has shown that support from peers makes a distinct contribution to student well-being and is not fully interchangeable with support from parents or teachers (Hoferichter et al., 2021). Likewise, studies comparing different social sources of support have indicated that parents, teachers, and peers each contribute uniquely to adolescent well-being (Fino et al., 2023). The present results support this view by demonstrating that peer support continued to predict psychological well-being even when family cohesion and self-esteem were considered simultaneously.

The role of peer support may be especially important because adolescents increasingly evaluate themselves and their social position through interactions with age-mates. Supportive friendships can provide emotional security, normalize developmental concerns, reduce loneliness, and strengthen social belonging. Longitudinal evidence has shown that the quality of peer relationships during adolescence is associated with loneliness in later developmental periods, indicating that peer experiences may have enduring implications for adjustment (Chiao & Chyu, 2022). More broadly, social connection has been linked to lower perceived depression and better adolescent mental well-being (Sarwar et al., 2022). The current findings are therefore consistent with a broader literature indicating that perceived social connectedness is a key correlate of psychological health. The result is also compatible with Canadian evidence emphasizing the protective role of belonging for youth mental health (Brown & Browne, 2024). In this respect, peer support may strengthen well-being by providing adolescents with a sense that they are understood, accepted, and socially embedded.

Peer support also significantly predicted self-esteem, with a standardized coefficient of $\beta = .34$. This finding suggests that peer relationships may contribute to psychological well-being partly through their influence on self-evaluation. Adolescents often derive information about their desirability, competence, social status, and interpersonal worth from peer interactions. Consistent experiences of acceptance and support may strengthen self-esteem, whereas rejection, exclusion, and bullying may undermine it. Previous research has demonstrated associations among peer relationships, self-esteem, and mental well-being, while also showing that these pathways can vary across broader identity and cultural contexts

(Mussina & Lawrence, 2026). Similarly, self-esteem has been found to mediate associations between interpersonal beliefs and social anxiety symptoms in adolescents (Saiding et al., 2025). These findings support the present structural model in which peer support contributes to adolescents' self-esteem and, through that pathway, to psychological well-being.

The present findings are also compatible with studies examining the consequences of negative peer experiences. Bullying and victimization are associated with poorer mental health outcomes across childhood and adolescence, demonstrating the psychological significance of peer contexts (Deniz et al., 2026). Socioeconomic disadvantage may increase exposure to bullying and related peer difficulties through multiple pathways (Runions et al., 2024), while victimization has been associated with serious outcomes such as suicidal behavior and reduced psychological adjustment (Ge, 2025). In contrast, supportive peer relationships may function as a protective factor by reducing social threat and increasing perceived availability of emotional resources. The current results therefore complement the bullying literature by demonstrating the positive side of peer functioning: when adolescents experience support rather than rejection, their self-esteem and psychological well-being appear to be higher.

Among all modeled paths, self-esteem had the strongest direct effect on psychological well-being, with $\beta = .49$. This result indicates that adolescents' global evaluation of their own worth is a particularly important proximal correlate of positive psychological functioning. Self-esteem can affect how adolescents interpret social feedback, cope with failure, respond to stress, and evaluate their capacity to manage environmental demands. Adolescents with higher self-esteem may be more likely to experience greater self-acceptance, confidence, purpose, and perceived competence, all of which overlap conceptually with major dimensions of psychological well-being. The present result is directly consistent with research showing that self-esteem significantly predicts psychological well-being among secondary school adolescents (Enwere & Iloakasia, 2024). It also aligns with studies demonstrating that self-esteem serves as a mediator between family functioning and psychological symptoms (Farmakopoulou et al., 2024) and between family functioning, peer relationships, and adolescent depression (Huang et al., 2022).

The mediating role of self-esteem was another important finding. Family cohesion had a significant indirect effect on psychological well-being through self-esteem, and peer

support showed a similar indirect effect. Because both direct and indirect pathways remained significant, self-esteem functioned as a partial mediator rather than a complete mediator. This means that supportive family and peer environments may enhance psychological well-being in at least two ways. First, they may directly provide emotional security, belonging, companionship, and practical support. Second, they may contribute to more positive internal self-evaluations, which in turn support psychological well-being. This pattern is consistent with research showing that self-esteem and peer relationships can jointly mediate the relationship between family functioning and adolescent emotional outcomes (Huang et al., 2022). It is also aligned with findings that peer attachment and self-esteem mediate the association between family functioning and social anxiety (Ying et al., 2022). Similarly, research on parent or peer alienation has demonstrated indirect associations with life satisfaction through resilience and self-concept clarity (Chen et al., 2022). Together, these studies support the interpretation that interpersonal relationships may become psychologically consequential partly because they shape internal representations of the self.

The partial rather than complete mediation observed in the present study is theoretically meaningful. It indicates that self-esteem is important but does not fully account for the effects of family cohesion and peer support. Family and peer relationships likely contribute to well-being through additional processes, including emotion regulation, resilience, perceived belonging, coping efficacy, and social competence. Contemporary integrative work on emotion regulation and subjective well-being highlights the importance of regulatory processes in adolescent adjustment (Jiang, 2026). Similarly, resilience has been identified as an important protective factor in adolescents facing interpersonal adversity (Armitage et al., 2021). The direct effects observed in the current model may therefore reflect multiple unmeasured mechanisms through which social relationships support adaptive functioning beyond their influence on self-esteem.

The results also reinforce a socioecological perspective on adolescent psychological well-being. The model combined a family-level variable, a peer-level variable, and an individual psychological variable, and together these constructs explained nearly 59% of the variance in psychological well-being. This relatively substantial explanatory power supports the view that adolescent mental health is shaped by interconnected levels of influence rather than by a single domain. Research adopting ecological

perspectives has similarly shown that social environments are associated with adolescent psychosomatic health and adjustment (Huang et al., 2023). School, family, and peer connectedness have also been identified as protective factors against depression and suicide risk (Ruiz et al., 2025). More broadly, evidence syntheses show that adolescent flourishing and distress are associated with multilevel social and individual factors (Kim, 2026). The current findings are therefore consistent with a growing shift from single-factor explanations toward integrated developmental models.

The strong explanatory role of social and self-evaluative factors may also help explain why positive psychological functioning differs across adolescents exposed to similar external demands. Adolescents commonly encounter academic stress, social comparison, identity challenges, and changing expectations. Yet their psychological responses to these pressures may depend partly on the quality of their relational resources and their internal sense of worth. Research on psychological detachment and academic stress has shown that coping resources can influence how young people respond to educational and cultural pressures (Chen et al., 2025). Social support and positive self-evaluation may therefore function as psychological resources that reduce the impact of stress and strengthen adaptive functioning. In a similar way, positive social experiences and supportive relationships may facilitate resilience even among adolescents exposed to victimization or adversity (Armitage et al., 2021).

The findings should also be considered in relation to broader processes of identity, belonging, and social acceptance. Adolescents who experience affirming responses from important others may be more likely to maintain positive self-evaluations and psychological well-being, whereas rejection may undermine both. This principle is illustrated in research showing that reactions to identity disclosure can shape mental health outcomes among sexual and gender diverse youth (Sherwood, 2026). Although the present study did not examine specific identity groups, the broader implication is consistent: social acceptance is psychologically consequential. Supportive families and peers may communicate that adolescents are valued and belong within important social systems, and these experiences may become incorporated into more positive self-beliefs.

The present findings are also consistent with research showing that positive adjustment is linked to broader social participation and relational competence. Prosocial behavior has been associated with youth mental health and may

operate within reciprocal pathways between social functioning and psychological adjustment (Hirani et al., 2022). Participation in peer-oriented educational activities can likewise affect interpersonal and intrapersonal outcomes (Nedungadi et al., 2023). Personal relationships have also been identified as important contributors to mental and physical health among young people (Kanth, 2022). These findings collectively support the conclusion that adolescent well-being is deeply embedded in relational functioning. The present model contributes to this literature by demonstrating a specific pattern in which family cohesion and peer support are linked to well-being both directly and indirectly through self-esteem.

5. Conclusion

The findings additionally support the usefulness of structural equation modeling for examining adolescent psychological functioning. Because family cohesion, peer support, self-esteem, and psychological well-being are theoretically related, analyses limited to separate correlations or regressions may obscure the simultaneous nature of these relationships. The current model demonstrated that family cohesion and peer support each made unique contributions even when their shared associations were taken into account. This is consistent with prior structural equation research demonstrating the value of simultaneously modeling social and individual predictors of adolescent functioning (Kassis et al., 2023). The significant fit indices obtained for the measurement and structural models further indicated that the proposed pattern of relationships was compatible with the observed data. Overall, the findings suggest that adolescent psychological well-being is best understood as the product of coordinated social and psychological resources rather than a single protective factor.

6. Limitations & Suggestions

Several limitations should be considered when interpreting these findings. First, the cross-sectional design prevents causal conclusions regarding the direction of relationships among family cohesion, peer support, self-esteem, and psychological well-being. Although the proposed model was theoretically grounded, reciprocal pathways are also plausible; for example, adolescents with higher psychological well-being may perceive their family and peer relationships more positively. Second, all major constructs were measured using self-report questionnaires,

which may increase shared-method variance and introduce biases related to social desirability, recall, or current mood. Third, the sample was drawn from secondary school students in Canada, which may limit the generalizability of the findings to adolescents in other cultural, socioeconomic, educational, or family contexts. Fourth, although the model explained a substantial proportion of the variance in psychological well-being, other potentially relevant factors such as emotion regulation, resilience, school belonging, academic stress, socioeconomic status, parental mental health, and exposure to bullying were not incorporated. Finally, the use of a general measure of peer support may not capture differences between friendship quality, peer acceptance, perceived popularity, and support from specific close friends.

Future studies should employ longitudinal and multiwave designs to determine the temporal ordering of family cohesion, peer support, self-esteem, and psychological well-being and to test whether reciprocal relationships emerge across adolescence. Cross-lagged panel models would be particularly useful for examining whether supportive relationships predict later self-esteem and well-being after controlling for prior levels of these constructs. Future research should also incorporate multiple informants, including parents, teachers, and peers, together with observational or behavioral measures to reduce dependence on self-report data. Comparative research across cultural groups, regions, and socioeconomic contexts would help determine whether the structural pathways identified in the present study are stable or context-dependent. More complex models could examine additional mediators such as emotion regulation, resilience, self-concept clarity, school belonging, and perceived competence, as well as moderators including gender, age, family structure, socioeconomic status, bullying exposure, and cultural identity. Latent profile or mixture modeling could also identify subgroups of adolescents characterized by different combinations of family cohesion, peer support, self-esteem, and well-being.

The findings suggest that interventions aimed at improving adolescent psychological well-being should simultaneously address family relationships, peer environments, and self-esteem rather than focusing on a single domain. Schools can implement structured peer-support programs, mentoring systems, cooperative learning activities, and social-emotional education designed to strengthen belonging and supportive peer interaction. Family-based programs can help parents and caregivers improve communication, emotional availability, conflict

management, and balanced involvement with adolescents while respecting increasing autonomy. Counselors and school psychologists should also assess self-esteem when working with adolescents who report low well-being, social withdrawal, family conflict, or peer difficulties. Interventions that combine supportive relationship-building with strategies for strengthening realistic self-worth, self-acceptance, competence, and adaptive coping may be particularly beneficial. At the institutional level, schools should promote psychologically safe environments in which adolescents experience acceptance, inclusion, and reliable access to supportive adults and peers, while family-school collaboration can help ensure that protective relationships are reinforced across the major contexts of adolescent development.

Acknowledgments

We would like to express our appreciation and gratitude to all those who cooperated in carrying out this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

Authors' Contributions

All authors equally contributed to this article.

References

Armitage, J. M., Wang, A., Davis, O. S. P., Collard, P., & Haworth, C. M. A. (2021). Positive Wellbeing and Resilience Following Adolescent Victimization: An Exploration Into Protective

- Factors Across Development. *JCPP Advances*, 1(2). <https://doi.org/10.1002/jcv2.12024>
- Brown, B., & Browne, D. T. (2024). Youth Mental Health in a Canadian Community Sample During COVID-19: Exploring the Role of Perceived Sense of Belonging. *Journal of Community Psychology*, 52(6), 720-738. <https://doi.org/10.1002/jcop.23125>
- Chen, N., Jing, Y., & Pang, Y. (2022). Relation Between Parent and Child or Peer Alienation and Life Satisfaction: The Mediation Roles of Mental Resilience and Self-Concept Clarity. *Frontiers in psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.1023133>
- Chen, Y. W., Lu, F., Sun, D., Liao, C., & Na, M. (2025). Psychological Detachment in Chinese Higher Education: A Multitheoretical Model of Academic Stress, Cultural Pressure, and Coping Resources. *Frontiers in psychology*, 16. <https://doi.org/10.3389/fpsyg.2025.1647184>
- Chiao, C., & Chyu, L. (2022). Perceived Peer Relationships in Adolescence and Loneliness in Emerging Adulthood and Workplace Contexts. *Frontiers in psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.794826>
- Çiçek, İ., Korkmaz, Z., Ünsal, F., Gómez-Salgado, J., & Yıldırım, M. (2025). The Effect of Secure Attachment on Family Relationships and Peer Bullying in Adolescents: The Mediating Role of Positive Childhood Experiences. *Frontiers in psychology*, 16. <https://doi.org/10.3389/fpsyg.2025.1700648>
- Dam, V. A. T., Ngoc, H., Vu, T. B. T., Vu, K. L., Minh, H. V., Nguyen, N. T. T., Nguyen, T. T., Vu, T. M. T., Nguyen, T. P. T., Auquier, P., Boyer, L., Fond, G. B., Latkin, C. A., Ho, C. S. H., & Ho, R. (2023). Associations Between Parent-Child Relationship, Self-Esteem, and Resilience With Life Satisfaction and Mental Wellbeing of Adolescents. *Frontiers in Public Health*, 11. <https://doi.org/10.3389/fpubh.2023.1012337>
- Deniz, E., Noret, N., Chow, A. R. W., Baldwin, J. R., & Toseeb, U. (2026). Bullying Trajectories From Childhood to Adolescence: The Relationship With Mental Health Outcomes for Autistic and Neurotypical Youth. *Autism Research*, 19(5). <https://doi.org/10.1002/aur.70227>
- Deniz, E., & Toseeb, U. (2023). A Longitudinal Study of Sibling Bullying and Mental Health in Autistic Adolescents: The Role of Self-esteem. *Autism Research*, 16(8), 1533-1549. <https://doi.org/10.1002/aur.2987>
- Enwere, C. A., & Iloakasia, A. J. (2024). The Role of Self-Esteem in Predicting Psychological Well-Being Among Senior Secondary School Adolescents in Anambra State: A Gender Perspective. *Applied Psychology Research*, 3(2), 1555. <https://doi.org/10.59400/apr1555>
- Esnaola, I., Martínez-Gregorio, S., Azpiazu, L., Antonio-Agirre, I., & Oliver, A. (2025). Do Parent Trust and Trait Emotional Intelligence Predict Self-Concept? A Longitudinal Study. *Psychology in the Schools*, 62(12), 5020-5037. <https://doi.org/10.1002/pits.70057>
- Farmakopoulou, I., Lekka, M., & Gkintoni, E. (2024). Clinical Symptomatology of Anxiety and Family Function in Adolescents—The Self-Esteem Mediator. *Children*, 11(3), 338. <https://doi.org/10.3390/children11030338>
- Fino, E., Kapllanaj, M., Crocetti, E., & Rubini, M. (2023). Who Matters the Most? The Role of Parents, Teachers, and Peers' Support in Adolescents' Well-Being. <https://doi.org/10.20944/preprints202306.1229.v1>
- Ge, X. (2025). Bullying Victimization, Suicidal Behavior, and Help-Seeking in Chinese Adolescents: A Legal-Psychological Study of Resilience and Responsibility. *Frontiers in psychology*, 16. <https://doi.org/10.3389/fpsyg.2025.1625188>

- Hirani, S., Ojukwu, E., & Bandara, N. A. (2022). Understanding the Role of Prosocial Behavior in Youth Mental Health: Findings From a Scoping Review. *Adolescents*, 2(3), 358-380. <https://doi.org/10.3390/adolescents2030028>
- Hoferichter, F., Kulakow, S., & Hufenbach, M. C. (2021). Support From Parents, Teachers, and Peers Is Differently Associated With School Students' Well-Being. <https://doi.org/10.31234/osf.io/mp3hq>
- Huang, X., Hu, N., Yao, Z., & Peng, B. (2022). Family Functioning and Adolescent Depression: A Moderated Mediation Model of Self-Esteem and Peer Relationships. *Frontiers in psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.962147>
- Huang, Y., Lu, J., & Širůček, J. (2023). The Associations Between Social Environment and Adolescents' Psychosomatic Health: An Ecological Perspective. *Frontiers in psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1141206>
- Jiang, L. (2026). Behavioral and Computational Perspectives on Emotion Regulation and Subjective Wellbeing: An Integrative Review With a Focus on Adolescents. *Frontiers in psychology*, 17. <https://doi.org/10.3389/fpsyg.2026.1778913>
- Kanth, D. B. (2022). Effects of Personal Relationships on Physical and Mental Health Among Young Adults- A Scoping Review. *The Open Psychology Journal*, 15(1). <https://doi.org/10.2174/18743501-v15-e2208180>
- Kassis, W., Vasiou, A., Govaris, C., Rietz, C., & Graf, U. (2023). Individual and Social Predictors of Greek Early Adolescents' Self-Determination: A Longitudinal Structural Equation Analysis. *Psychology the Journal of the Hellenic Psychological Society*, 28(2), 176-194. https://doi.org/10.12681/psy_hps.31471
- Kim, T. (2026). Multilevel Socioecological Correlates of Physical Activity, Flourishing, and Depression in Children and Adolescents: A Structured Evidence Synthesis. *Frontiers in Public Health*, 14. <https://doi.org/10.3389/fpubh.2026.1871867>
- Lin, J., & Guo, W. (2024). The Research on Risk Factors for Adolescents' Mental Health. *Behavioral Sciences*, 14(4), 263. <https://doi.org/10.3390/bs14040263>
- Monika, M., Majeed, J., & Sharma, N. (2023). Psychological Well-Being of Adolescents. *JRTDD*. <https://doi.org/10.53555/jrtdd.v6i7s.2157>
- Mussina, Z., & Lawrence, K. C. (2026). Ethnic Identity Can Moderate the Relationship Between Self-Esteem, Peer Relationships, and Mental Well-Being of Adolescent and Youth. *BMC psychology*, 14(1). <https://doi.org/10.1186/s40359-026-04046-y>
- Nedungadi, P., Menon, R., Gutjahr, G., & Raman, R. (2023). Adolescents as Ambassadors in Substance Abuse Awareness Programs: Interpersonal and Intrapersonal Effects. *Sustainability*, 15(4), 3491. <https://doi.org/10.3390/su15043491>
- Németh, L., & Bernáth, L. (2022). The Mediating Role of Global and Contingent Self-Esteem in the Association Between Emerging Adults' Perceptions of Family Cohesion and Test Anxiety. *Journal of Adult Development*, 29(3), 192-204. <https://doi.org/10.1007/s10804-022-09396-6>
- Ruiz, Y. P., Pérez-Torres, V., Angulo-Brunet, A., García, J. E. N., & Gallardo-Nieto, E. (2025). School, Family, and Peer Connectedness as Protective Factors for Depression and Suicide Risk in Spanish Adolescents. *Frontiers in psychology*, 16. <https://doi.org/10.3389/fpsyg.2025.1547759>
- Runions, K., Sae-Koew, J. H., Pearce, N., Sarasjärvi, K. K., Attey, M., & Mitrou, F. (2024). Pathways of Socioeconomic Disadvantage and Peer Bullying in Children and Youth: A Scoping Review. *Health Education & Behavior*, 52(1), 122-134. <https://doi.org/10.1177/10901981241275631>
- Saiding, A., Wang, H., Ma, J., Zhang, H., Guo, K., Wu, Y., Luo, X., & Chen, C. (2025). Belief in Others and Social Anxiety Symptoms Among Rural Chinese Adolescents: A Moderated Mediation Model of Self-Esteem and Gender. *School Psychology International*, 46(5), 475-498. <https://doi.org/10.1177/01430343251377115>
- Sarwar, A., Islam, M. A., Mohiuddin, M., Tareq, M. A., & Siddika, A. (2022). Social Connections and Self-Perceived Depression: An Enhanced Model for Studying Teenagers' Mental Wellbeing. *International journal of environmental research and public health*, 19(23), 15791. <https://doi.org/10.3390/ijerph192315791>
- Sherwood, S. H. (2026). Life Outside the Closet: How Disclosure Reactions Shape Mental Health for Sexual and Gender Diverse Youth in European Schools. *Psychology of Sexual Orientation and Gender Diversity*. <https://doi.org/10.1037/sgd0000953>
- Sitnik-Warchulska, K., Izydorczyk, B., Markevych, I., Baumbach, C., Mysak, Y., Buczyłowska, D., Szwed, M., & Lipowska, M. (2025). Family Cohesion and Behavioural Problems in Young Adolescents: Mediating Effects of Neighbourhood Cohesion and Moderating Roles of Individual and Family Structure Factors. *Journal of Community & Applied Social Psychology*, 35(2). <https://doi.org/10.1002/casp.70071>
- Tay-Karapas, K., Guzmán-González, M., Bahamondes, J., & Comino, P. (2025). Maternal and Paternal Attachment and Subjective Well-being in Adolescents Who Experienced Parental Divorce. *Family Relations*, 74(4), 1946-1960. <https://doi.org/10.1111/farc.13163>
- Toseeb, U., & Wolke, D. (2021). Sibling Bullying: A Prospective Longitudinal Study of Associations With Positive and Negative Mental Health During Adolescence. *Journal of youth and adolescence*, 51(5), 940-955. <https://doi.org/10.1007/s10964-021-01495-z>
- Verdugo, L., & Sánchez-Sandoval, Y. (2022). Psychological and Social Adjustment as Antecedents of High School Students' Future Expectations. *Journal of Psychologists and Counsellors in Schools*, 32(1), 39-53. <https://doi.org/10.1017/jgc.2020.1>
- Ying, L., Zhang, S., & Jia, X. (2022). Peer Attachment and Self-esteem Mediate the Relationship Between Family Function and Social Anxiety in Migrant Children in China. *Child Care Health and Development*, 49(3), 563-571. <https://doi.org/10.1111/cch.13072>