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Article

Effects of social support on adolescent identity development

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SUMMARY

Adolescence is crucial in shaping an individual's sense of self and identity. During this transformative stage, individuals are particularly sensitive to the feedback and support they receive from their social networks, as these can significantly impact an individual's self-perception and the construction of their self-concept. This research explores the complex relationships between self-concept development during adolescence and various forms of social support, including support from parents, peers, and adults. We used multiple linear regressions to examine relations between social support and self-concept development in students grades 7–12 (at baseline N=20,745) using data from Wave 2 of the National Longitudinal Study of Adolescent to Adult Health, or Add Health. We hypothesized that the interaction between parent and peer support would positively influence adolescent self-concept. Although parent and peer support individually showed no direct effect on adolescent self-concept, we found that the interaction between these two factors significantly influenced adolescent self-concept. We additionally noted sex differences in self-concept. The results of our study underscored the interplay between various sources of social support in fostering healthy self-concept development in adolescents. By exploring these dynamics, we can gain a deeper understanding of how individuals navigate their sense of self in response to social influences, thus ultimately shedding light on strategies to foster healthy self-concept development in adolescents and improve their overall well-being.

INTRODUCTION

Adolescence is a pivotal period of development characterized by significant psychosocial changes as individuals navigate the complexities of identity formation and self-concept (1). Self-concept is a foundational element in one's self-esteem that represents an individual's perception and understanding of themselves developed through different environmental factors (2). Self-concept formed during adolescence can persist into adulthood. 300 individuals over the age of 60 were interviewed to assess their self-concept levels using the EASYCare Standard 2010 questionnaire (3). The results of this study suggest that older adults with higher self-concept scores (meaning that they see themselves positively) tend to handle psychosocial challenges more effectively, whereas those who are dissatisfied with life or burdened by negative past experiences typically have lower self-concept scores (4). Positive social support networks are known to contribute significantly to the development of a positive self-concept (5). While adolescence is marked by resilience and vitality, it is also a period when psychiatric illnesses can emerge (4). Positive social support from family, friends, neighbors, and community members have been found to significantly enhance resilience to stress, protect against trauma-related disorders like PTSD, and reduce medical issues and mortality (6). Adolescent self-concept and ethnic identity can be interconnected, with ethnic identity playing a role in the development of self-concept. Exploring this relationship can provide insights into how cultural and social factors influence adolescents during this critical developmental stage.

Parenting can have lasting effects on how children perceive themselves, understand their roles in society, and develop their unique personalities (7). A longitudinal study involving Crocetti found that adolescents with parents characterized by strong self-certainty tend to experience an increase in their self-concept clarity particularly as they progress through adolescence (1). Parental support can also provide children with a sense of security and a boost of confidence (8). For instance, parents' warmth was associated with positive traits in their children, such as extraversion, agreeableness, conscientiousness, and openness to experience (9). This concept aligns with Social Learning Theory, which argues that children adopt behavioral patterns by observing significant individuals, such as their parents (10). Consistent with Social Learning Theory, parents who possess clear and confident self-beliefs may serve as more influential role models for adolescents as they explore their identity compared to parents who have uncertain self-beliefs (1).

Self-concept is a changing set of beliefs an individual holds about themselves that can be influenced by cultural factors (11,12). Negative self-concept can stem from factors such as believing statements like "I am a poor student" due to academic struggles and endorsing negative affirmations such as "I am a troublemaker" because of problematic behavior, often influenced by authority figures like teachers (13). The social support with which an individual grows up and the myriad experiences they encounter throughout their life significantly influence how they perceive themselves, ultimately shaping their self-concept (13). This influence on identity can be detrimental, as teenagers with low self-concept in both behavior and academics are more likely to engage in substance use, risky sexual behaviors, and various other problem behaviors (13). Adolescents are susceptible to negative self-concept if they receive predominantly critical or exclusionary feedback from peers (15). Young individuals

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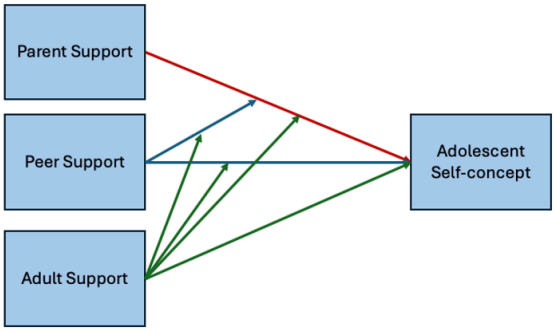

Figure 1. Graph of Social Support Models and Interaction Effects on Adolescent Self-Concept. The models represent multiple linear regression models depicted by the arrows. Model 1 illustrates parent support predicting adolescent self-concept, shown by the red arrow. Model 2 demonstrates the main effect of parent support, the main effect of peer support, and a relationship between parent and peer support, indicated by the blue and red arrows. Model 3 includes the main effects of parent, peer, and adult support, as well as the relationships between them, depicted by the green, blue, and red arrows.

increasingly identify friends as a substantial source of social and emotional support in their lives as they grow up (14). Negative peer interactions, such as bullying or social rejection, can erode self-concept and result in the internalization of unfavorable self-beliefs. Additionally, the interaction between parent and peer support may offer unique benefits that contribute to adolescent self-concept development, reflecting a holistic perspective on social support dynamics and their implications for adolescent well-being.

In addition to peer relationships, interpersonal relationships with adults like teachers developed during their childhood years is another adolescents' self-concept development (16). Having an additional adult figure to parents such as an athletic coach in an adolescent's life is linked to a positive self-concept, as this figure provides a sense of belonging and provides mentorship (13). Some examples of these positive behaviors underlying include offering support through providing encouragement, actively listening, and offering guidance to the child (17). Understanding self-concept development is crucial to support individuals in their journey towards a positive self-identity. In turn, this can lead to improved mental and emotional well-being, healthier relationships, and greater overall life satisfaction (12).

Building on prior literature, our study examined the influence of different sources of social support during adolescence. We systematically analyzed the influence of peers, parents, and other adults, across different participant ages and backgrounds using the National Longitudinal Study of Adolescent to Adult Health (Add Health) study. The Add Health study is an extensive and nationally representative longitudinal survey that monitors the growth of a cohort of adolescents across the United States, surveying approximately 14,738 participants from grades 7 through 12 over several waves of data collection spanning from 1995 to 2008. We specifically focused on the proposed sensitive period of adolescence, filling a temporal gap in existing literature that often emphasizes early childhood or later stages of adulthood (18). Prior literature has suggested that adolescence is a period of transition, where reliance on and modeling of behavior shifts from parents to outside influences, such as peers and other adults (19). Therefore, in the context of self-concept, examining all these types of social support in tandem may provide a better understanding of their differential impact on self-concept. Our overall goal was to enrich the field of adolescent development by offering a temporally informed perspective on the interplay between parenting of adolescents and adolescent self-concept, which can inform both research and practical interventions in this crucial area of human development.

	Residual degrees of freedom	Residual Sum of Squares	Degrees of Freedom	Sum of Squares	F	p (>F)
Model 1	881	18875.60				
Model 2	879	18096.23	2.00	779.37	19.02***	< 0.001
Model 3	875	17926.42	4.00	169.81	2.07*	0.08

Table 1. Model comparisons of Models 1, 2, and 3. Comparison of three statistical models showing residual degrees of freedom, residual sum of squares, degrees of freedom, sum of squares, F-statistic, and p-value. Model 1 is the baseline model. Model 2 shows significant improvement over Model 1 ($p < 0.001$), while Model 3 shows a marginal improvement ($p = 0.08$). ***p<0.001, **p<0.05, *p<0.1. Model 1 serves as a baseline comparison model for the more complex models (2 and 3). Therefore, it does not have all the statistics reported.

Using a publicly available dataset, we aimed to examine the role of social support in adolescent self-concept among a sample of 884 individuals aged 12-20. We investigated various types of social support and their impact on self-concept by comparing three models: parent support alone (Model 1), peer support moderating parent support (Model 2), and both peer and adult support moderating parent support (Model 3) and determined which model best predicted adolescent self-concept. By exploring these various interpersonal dynamics, we aimed to capture the multifaceted nature of adolescents' social networks and the potential influences these relationships might have on their self-concept development. This hypothesis is supported by theoretical frameworks such as social comparison theory and attachment theory, which emphasize the significance of peer relationships and parental support during adolescence. We hypothesized that the combined influence of parent support and peer support, as represented by the interaction term in Model 2, would show a positive association with adolescent self-concept, suggesting that higher levels of support from both parents and peers would correspond with increased self-concept scores compared to scenarios where support comes from a single source or is limited. Our results supported our hypothesis that the interaction between parent and peer support significantly influences adolescent self-concept. Additionally, Model 2 indicated that the combined influence of parent and peer support positively impacted self-concept scores, whereas the other models did not show a strong trend in either direction. These findings highlighted the importance of a multifaceted support system in fostering a positive self-concept among adolescents and suggested that integrating both parental and peer support could be crucial for interventions aimed at enhancing adolescent self-esteem.

RESULTS

Initially, we developed three different models to assess the relationship between social support and self-concept: Model

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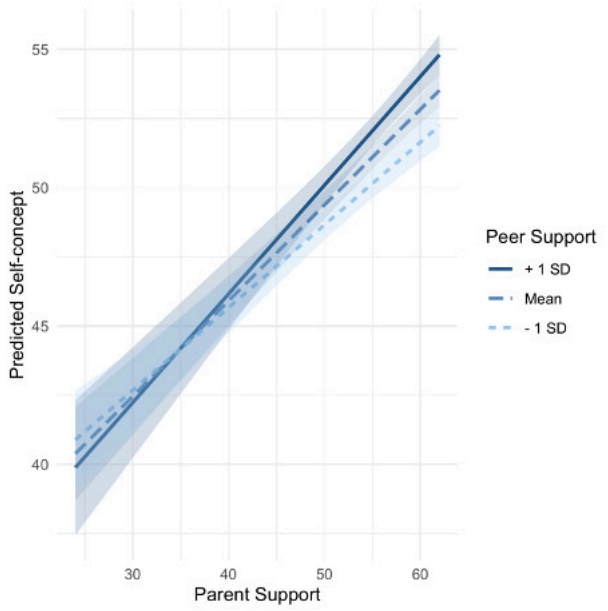

Figure 2. Peer support moderates the relationship between parent support and self-concept. Parent support scores (X-axis) predict adolescent self-concept scores (Y-axis), with the solid dark blue line indicating more positive peer support (1 standard deviation above the mean of peer support), the longer dashed blue line indicating the mean of peer support, and the shorter dashed light blue line indicating more negative peer support (1 standard deviation below the mean of peer support). The graph suggests that the effect of parent support on self-concept depends on peer support such that higher levels of parent and peer support are associated with a stronger self-concept among study participants (t(5,879)=2.20, p = 0.03). For the full mathematical representation of this model, see Model 2 in the "Modeling and Statistical Analyses" section above.

1 used only parent support as a predictor; Model 2 used both parent and peer support and their interaction; and Model 3 used parent, peer, and adult support and their interactions (**Figure 1**). Based on the model comparison results, the model that incorporates both parent and peer support, along with their interaction (Model 2), stands out as the most appropriate fit for our dataset (F(2,879) = 19.02, p<0.001). The analysis of variance (ANOVA) statistics for each model are shown in **Table 1**.

Notably, parent support and peer support alone did not exhibit significant direct effects on self-concept. However, a compelling finding emerged from the interaction between these two forms of support. The significant interaction effect indicated that the combined influence of parent and peer support positively impacted self-concept scores. This result underscores the importance of considering the interaction between different types of support rather than evaluating their effects in isolation. In a sample of 5,879 adolescents, the joint influence of parent and peer support was positively associated with higher self-concept scores (t(5,879)=2.20, p < 0.05; **Figure 2 and Table 2**). Additionally, the analysis revealed a sex difference in self-concept, with females showing lower self-concept scores compared to males (t(5,879)=-2.32, p < 0.05; **Figure 3 and Table 2**). The lack of significance related to age suggests relative stability in self-concept within the age range studied (12–20). This indicates that when adolescents reported receiving more support from both their parents and peers, their self-concept benefited synergistically.

	Estimate	Std. Error	t-value	p-value
Intercept	50.9475	0.2235	227.926	< 2e-16 ***
Parent Sum	2.1011	0.1630	12.890	< 2e-16 ***
Sex	-0.7101	0.3058	-2.322	0.0205*
Age	0.1894	0.1533	1.236	0.217
Peer Sum	0.9321	0.1579	5.902	5.11e-9***
Parent Sum: Peer Sum	0.2855	0.1308	2.182	0.0294*

Table 2. Parent and peer support and their interaction predicting adolescent self-concept (Model 2, best-fitting model). This table presents the regression analysis results for Model 2, predicting adolescent self-concept. It includes estimates, standard errors, t-values, and p-values for each predictor. Significant predictors are parent support (p < 2e-16), peer support (p < 2e-16), sex (p = 0.0205), and the interaction between parent and peer support (p = 0.0294). ***p < 0.001, **p < 0.01, *p < 0.05.

Our sensitivity analysis found that whether an individual identified as Asian or Pacific Islander was significantly correlated with adolescent self-concept. Therefore, we repeated the focal analyses but with the inclusion of whether an individual identified as Asian or Pacific Islander. The best-fitting model, Model 2, still included parent support, peer support, and their interaction. The results showed that the interaction between parent and peer support had a significant positive effect on self-concept (β = 0.2726, p = 0.0378), while identification as Asian or Pacific Islander did not show a significant effect (β = -0.5088, p = 0.1426). This suggests that the combined influence of parent and peer support remains a critical factor in adolescent self-concept, regardless of whether an individual identifies as Asian or Pacific Islander.

DISCUSSION

We found that the interaction between parent and peer support significantly influenced adolescent self-concept, which supported our hypothesis. This is evident from the statistical analysis, which demonstrates that the combined effect of parent and peer support yields a positive association with self-concept. However, when examined individually, peer and parent support did not show direct effects on self-concept. These results suggest that a combined effort from parents and peers may offer a more comprehensive environment for self-concept growth in adolescents.

While adolescent self-concept was significantly correlated with whether an individual identified as Asian or Pacific Islander, the addition of this variable in our focal models did not change the original findings. This suggests that although ethnic identity plays a role in self-concept, the primary influences of parental and peer support remain robust across different ethnic groups. The positive association between the interaction of parent and peer support and self-concept development indicates that having both sources of support simultaneously may create a balanced support system. This balance can provide adolescents with a sense of security from their parents while also fulfilling their need for social acceptance and validation from their peers. Therefore, the

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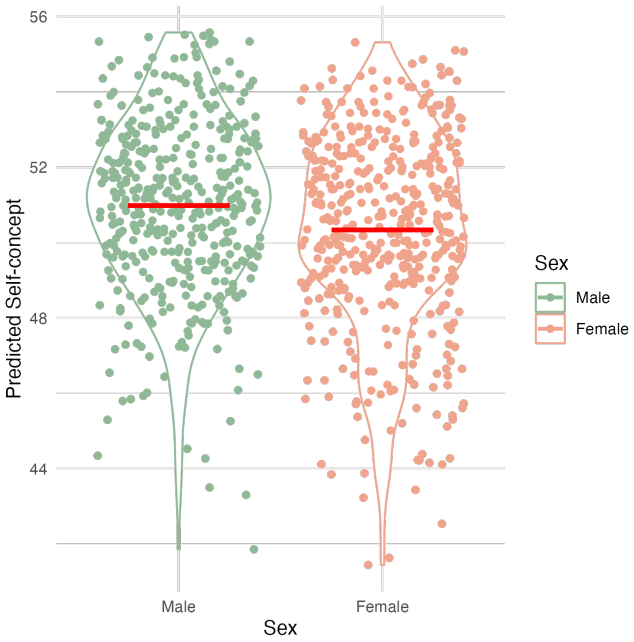

Figure 3. Violin plot of sex differences in adolescent self-concept. The green data points represent male participants' self-concept scores, and the orange data points represent female participants' self-concept scores. The solid outline represents the distribution of the data. In this study, the males had an on average higher predicted self-concept score than the females ($t(5,879)=-2.32$, $p < 0.05$). The means for each group are indicated by the red horizontal lines.

combined influence of both parent and peer support appears to exceed the sum of their parts, offering a synergistic effect that enhances self-concept more effectively than either source alone. This interaction may be particularly beneficial as it addresses the diverse and dynamic needs of adolescents. Parents can provide stability and guidance, while peers can offer relatability and social engagement. Together, these supports can help adolescents navigate the challenges of this developmental stage more effectively.

The lack of significant contribution from adult non-parent figures might appear at odds with previous research (16). However, our analysis highlighted that the interplay between parent and peer support was more critical for self-concept development. This emphasized the importance of considering how different sources of social support interacted rather than evaluating their effects in isolation. It also suggested that interventions aimed at promoting healthy self-concept development in adolescents should have focused on enhancing parent and peer support rather than solely relying on support from adult non-parent figures.

Our findings emphasized the importance of considering the combined impact of parent and peer support in fostering healthy self-concept development in adolescents, supporting our hypothesis that this combined influence is crucial. The synergy observed in our study between these two sources of support extends these findings by highlighting the enhanced benefits of their interaction.

The finding that females had lower self-concept scores compared to males aligns with some previous research on sex differences in self-concept during adolescence (20). The difference may be influenced by social and cultural factors and warrants further investigation. The trend was consistent across all models fit in our study; however, the larger sample size for females compared to males in our dataset might have influenced this finding. Adolescent girls tend to have lower self-esteem and more negative assessments of their physical characteristics and intellectual abilities than boys, which may explain the observed difference (20). The disparity in sample size could have resulted in a stronger representation of female self-concept issues, potentially skewing the overall results and leading to an overestimation of the negative self-concept trend. Addressing gender disparities in self-concept and exploring strategies to promote positive self-esteem, particularly among adolescent girls, is essential to ensuring accurate and comprehensive findings.

T he non-significant relationship between age and self-concept suggests that, within the age range of the study participants (12–20), self-concept remained relatively stable over this period as there is lack of a statistically significant finding. However, self-concept development may exhibit more variability in different age groups or across longer periods of development (1).

Overall, our results underscore the importance of integrating both parent and peer support to enhance self-concept development in adolescents. The combined approach suggests potential benefits for interventions designed to engage both sources of support, offering a more comprehensive strategy for promoting healthy self-concept. Programs that involve both parents and peers could be particularly effective in providing the encouragement and support necessary for positive self-concept development. Alongside this, the limited contribution of adult non-parent figures to positive self-concept in adolescents that we observed may stem from several factors. Firstly, adolescents may have limited interaction with these figures compared to parents and peers, which reduces their impact on self-concept development. Additionally, adolescents may prioritize parental and peer influences over those of adult non-parent figures in the process of identity formation. Our analysis did not reveal the expected interaction effect involving adult non-parent figures, suggesting that their influence on adolescents' self-concept may be context-dependent or less significant than anticipated. For example, non-parent adults might be most influential only in particular situations, such as when a child lacks other positive adult role models. Furthermore, the relative rarity of non-parent adults compared to parents and peers could contribute to the limited observed effect. Our findings indicate that while parental and peer support play significant roles in shaping self-concept, the influence of adult non-parent figures may be comparatively limited.

Limitations of this study include its reliance on self-report measures, which may introduce bias, as participants might overestimate or underestimate their levels of support and self-concept. The cross-sectional design of the study also limits the ability to draw causal inferences about the relationship between social support and self-concept development. Additionally, children who did not live in two-parent households were known to be more vulnerable to low self-image, so it seemed like these children might have benefited the most from interventions that improved their support structures. Hence, it was important to consider these children. The results may not be representative of self-concept development in older young adults, as the sample

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Racial Identity	White	590
	Black or African-American	204
	Native American	29
	Asian or Pacific Islander	51
	Other	55
Welfare Status	On Welfare	66
	Not on Welfare	726
	Refused to answer	3

Table 3. Demographic factors of the sample. The table lists the demographic variables of the sample, including sex, age, racial identity, and welfare status. Sex is categorized into male (359) and female (525). The mean age of participants is 15.98 years (range: 12-20). Racial identity includes White (590), Black or African American (204), Native American (29), Asian or Pacific Islander (51), and Other (55). Welfare status is categorized into on welfare (66), not on welfare (726), and refused to answer (3).

was restricted to adolescents aged 12-20. Another limitation is the potential for unmeasured confounding variables, such as socioeconomic status or mental health conditions, which could influence the observed relationships.

Future research could explore the long-term effects of social support on self-concept development and consider additional factors that may influence this relationship. Researchers could conduct comparative studies across diverse cultural contexts to reveal how cultural factors influence the interplay between social support and adolescent self-concept, thereby identifying unique dynamics and broadening our understanding of these relationships on a global scale. Research could also focus on the role of social support within educational environments, such as how various forms of support, including teacher support, peer relationships, and parental involvement, influence self-concept and academic achievement among adolescents. Research may shed light on the multifaceted interactions within educational settings and provide guidance for educators and policymakers on how to create supportive learning environments that nurture positive self-concept and academic success in students.

In conclusion, we found that a combination of parent and peer support, along with their interaction, was correlated with shaping adolescent self-concept. While adolescence was not as commonly studied in this context, our findings offered an interesting contrast to studies focusing on other age groups, such as children and adults. Our results aligned with existing adolescent studies that underscored the importance of parental and peer support during this developmental stage (8). However, unlike some studies that found notable effects of non-parent adult mentors on adolescents' self-concept, our findings suggested that these figures had a more limited impact (17). Understanding these dynamics can inform interventions and strategies to enhance self-concept development in adolescents, ultimately contributing to their overall well-being.

MATERIALS AND METHODS

The Add Health (National Longitudinal Study of Adolescent to Adult Health) study is a comprehensive and nationally representative longitudinal survey that tracks the development of a cohort of adolescents in the United States (21). Publicly available data from the second interview wave conducted in 1995-1996, which includes a sample size of 14,738 participants across grades 7 through 12, were used for these analyses. The specific subset of data used (N = 884, with 525 females, aged 12–20 years) was determined based on data availability among the participants (**Table 3**).

Assessment of Relationship with Parents

Participants were asked to use a 5-point Likert scale to indicate their level of agreement or disagreement with specific statements. An example of statements shown is “{MOM NAME} encourages you to be independent?” Participants were also presented with two questions to gauge their level of emotional closeness to their parents with the following questions: “How close do you feel to {MOM NAME}?” and “How close do you feel to {DAD NAME}?” Participants had the option to select 1 (not close at all) to 5 (extremely close) for each question. A summary score was created using the participants’ responses to each question. The scores related to mothers and fathers were combined to create a single parent support variable ranging from 24 to 62, with a lower score meaning less parental support for the child. All models were assessed for normality and equal variance, and log or square root transformations were used as necessary to satisfy model conditions.

Assessment of Relationship with Peers

In relation to peers, participants were asked questions such as, “How much do you feel that your friends care about you?” and “Do you feel close to the people at your school?”. Responses of the questions used a 5-point scale where participants could choose 1 (strongly agree) to 5 (strongly disagree) or 1 (not at all) to 5 (very much) depending on question structure. A summary score was created by adding the items together. The range of the scores was 11 to 29, with lower scores representing less peer support or lower levels of peer involvement.

Assessment of Relationship with Adults

To evaluate the level of care and concern expressed by non-parent adults toward participants, questions such as the following were presented: “How much do you feel that adults care about you?” and “How much do you feel that your teachers care about you?” These questions were again rated on a scale from 1 to 5, allowing participants to choose 1 (not close at all) to 5 (extremely close). In these categories, various items were reversely scored when appropriate. A summary score was created by adding the items together. The range of scores was 8 to 27, with lower scores representing limited support from other adults in the child’s life.

Self-Concept Assessment

For the dependent variable, self-concept was assessed by summing responses to various questions related to how participants view themselves. Again, participants were asked to express their level of agreement or disagreement with each statement. For example, one statement in the questionnaire was “You have a lot to be proud of.”

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Modeling and Statistical Analysis

For the independent variables, we investigated interpersonal relationships involving adolescents and significant figures in their lives, including interactions between parents and children, associations with peers, and influential adult figures (e.g., teachers). Sample questions assessed the adolescents' perceived closeness with these individuals and the extent to which they felt valued by them. To examine various types of social support and their impact on adolescent self-concept, we compared models of parent support alone (Model 1), peer support moderating parent support (Model 2), and peer and adult support moderating parent support (Model 3). To do this, we used data from the second interview wave of the Add Health study conducted in 1995–1996 and multiple linear regression techniques. We used ANOVA via the "anova" function in R to compare various models, and the model with the highest R^2 value was selected as it explained the most variation in the dependent variable. Additionally, significant coefficients with a p value < 0.05 were reported. Only significant unstandardized coefficients were interpreted, but all unstandardized coefficients were presented. The analyses were conducted in R (v4.2.3) using the lmer4 (v1.134) package (22). In these equations β represented each term's coefficient or estimate and ε represented the error term.

Model 1: Adolescent Self-Concept$_i$ = $\beta_0 + \beta_1$(Parent Support$_i$) + β_2(Age$_i$) + ε_i
Model 2: Adolescent Self-Concept$_i$ = $\beta_0 + \beta_1$(Parent Support$_i$) + β_2(Peer Support$_i$) + β_3(Parent Support$_i$)(Peer Support$_i$) + β_4(Age$_i$) + ε_i
Model 3: Adolescent Self-Concept$_i$ = $\beta_0 + \beta_1$(Parent Support$_i$) + β_2(Peer Support$_i$) + β_3(Parent Support$_i$)(Peer Support$_i$) + β_4(Adult Support$_i$) + β_5(Parent Support$_i$)(Adult Support$_i$) + β_6(Peer Support$_i$)(Adult Support$_i$) + β_7(Parent Support$_i$)(Peer Support$_i$)(Adult Support$_i$) + β_8(Age$_i$) + ε_i

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