

Perceived Social Support, School Belonging, and Psychosocial Outcomes Among Turkish Adolescents

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Original Research

Abstract

The present study aimed to examine the indirect associations between perceived social support (PSS) and psychosocial outcomes through school belonging (SB). This cross-sectional study included 807 seventh- and eighth-grade students (373 boys and 434 girls; M age = 13.13 years, range = 11-14) recruited from six middle schools in İstanbul, Turkey, using convenience sampling. Participants completed the Multidimensional Scale of Perceived Social Support (MSPSS), the Psychological Sense of School Membership Scale (PSSM), and the Strengths and Difficulties Questionnaire (SDQ). Path analysis indicated that PSS was directly and indirectly associated with adolescents' psychosocial outcomes through school belonging. Family support was positively associated with school belonging

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($\beta = 0.28$), which was in turn associated with lower levels of internalizing ($\beta = -0.40$) and externalizing problems ($\beta = -0.27$) and higher levels of prosocial behaviors ($\beta = 0.23$). Support from significant others was also positively associated with school belonging ($\beta = 0.25$) and prosocial behaviors ($\beta = 0.07$), and negatively associated with internalizing ($\beta = -0.14$) and externalizing problems ($\beta = -0.22$). Friend support was directly associated with higher externalizing problems ($\beta = 0.13$). All indirect associations through school belonging were statistically significant ($P < 0.001$). These findings underscore the significance of school belonging in relation to adolescents' emotional and behavioral functioning.

Keywords: internalizing and externalizing problems, perceived social support, prosocial behaviors, school belonging

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Introduction

Adolescence is a critical developmental period marked by notable physical, cognitive, social and emotional changes (Fabris & Longobardi, 2024). Nonetheless, early adolescence, (10-14 years) has received comparatively less attention. (Blum et al., 2014). The World Health Organization (2021) reports that about 14% of adolescents suffer from mental health conditions, which account for 13% of the global disease burden in this age group. Depression, anxiety, and behavioral disorders are among the leading causes of illness and disability during adolescence. Research indicates that inclusive and supportive school environments can mitigate the adverse effects of social stressors and promote better mental health outcomes (Arslan, 2018).

From a developmental perspective, successful adaptation to the school environment is often conceptualized as school adjustment (Ladd, 2003; Wang & Eccles, 2012). School adjustment reflects the degree to which adolescents are psychologically, socially, and behaviorally integrated into the school context (Roeser et al., 2000). Difficulties in emotional regulation, peer interactions, and behavioral control may therefore be understood as indicators of maladjustment to school demands and expectations.

Internalizing and externalizing problems represent two broad dimensions of adolescent psychopathology (Malakooti et al., 2026). Internalizing problems are inwardly directed and include conditions such as depression, anxiety, and social withdrawal. On the other hand, externalizing problems are outwardly directed and encompass behaviors such as aggression, delinquency, and hyperactivity (Forns et al., 2011). Adolescence also presents a key period for fostering prosocial behaviors, which involve voluntary actions intended to benefit and assist others (Van der Graaff et al., 2018). These behaviors contribute to the development of positive interpersonal relationships among adolescents (Carlo, 2013). Studies have reported that factors such as the quality of relationships with parents, family members, and friends, social support, psychological flexibility, and positive affect can significantly predict prosocial behaviors in adolescents (Haller et al., 2022; van Meegen et al., 2024). Importantly, internalizing and externalizing problems reflect difficulties in school adjustment. Internalizing symptoms, such as anxiety and social withdrawal, undermine adolescents' emotional engagement and peer integration at school, whereas externalizing behaviors disrupt classroom functioning, academic engagement, and relationships with teachers and peers (Ladd & Burgess, 2001; Wentzel, 2017). Consequently, elevated levels of these symptoms are associated with poorer emotional, relational, and academic functioning within the school context.

The mental health of children and adolescents in Turkey is a growing concern. Recent evidence indicates relatively high rates of psychological disorders among Turkish youth, including anxiety disorders and ADHD, compared with other European countries (Sacco et al., 2022). A nationwide study further reported substantial levels of

psychopathology among Turkish children and adolescents, highlighting the importance of addressing adolescent mental health within this cultural context (Ercan et al., 2019).

The ecological systems theory (Bronfenbrenner, 2005) emphasizes the multiple environmental systems that influence an individual's development, including the microsystem (e.g., family, school), mesosystem (interactions between microsystems), exosystem (external environments that indirectly affect development), and macrosystem (cultural and societal influences). Additionally, the Self-Determination Theory (SDT) posits that fulfilling the basic psychological needs for autonomy, competence, and relatedness is essential for optimal development and well-being (Ryan & Deci, 2000). In this context, social support is consistently associated with adolescent mental health and well-being (Acoba, 2024). More specifically, evidence suggests that school belonging may represent an important pathway linking social support with mental health outcomes including academic involvement and resilience (Allen et al., 2018; Li & Li, 2024; Vargas-Madriz & Konishi, 2021). However, there remains a gap in our understanding regarding the role of school belonging in the relationship between social support from various sources (friends, family, and significant others) and more proximal variables to mental health, such as internalizing, externalizing, and prosocial behaviors among adolescents. Accordingly, the present study examined whether perceived social support was indirectly associated with adolescents' emotional and behavioral outcomes via school belonging.

Social support refers to the perception that supportive relationships are available when needed (Cohen, 2004). Adolescents who perceive greater support from family, friends, and significant others generally report better psychological adjustment and fewer emotional and behavioral difficulties (Lyell et al., 2020; Petersen et al., 2023; Samadieh & Soleimani, 2025). However, social support is not a unitary construct, and different sources of support may have distinct associations with adolescent development (Cobo-Rendón et al., 2020).

Studies have indicated that higher levels of social support by family are associated with fewer depressive symptoms among adolescents (Mancini et al., 2016); higher psychological well-being in both children (Yan et al., 2024) and university students (Chaudhry et al., 2024); and a higher level of academic success among university students (Roksa & Kinsley, 2019; Samadieh et al., 2026).

In addition to family support, friendships become increasingly important during early adolescence. Adolescents who have supportive friends exhibit reduced internalizing problems (Bernasco et al., 2021) and a stronger sense of school belonging (Samadieh et al., 2023; Vargas-Madriz & Konishi, 2021). Moreover, adolescents with less favorable perceptions of social support have been at greater risk of delinquency and bullying (Scholte et al., 2001); have demonstrated reduced prosocial behavior (Mu & Du, 2024); have indicated less school adjustment (Azpiazu et al., 2024); and have reported less psychological well-being (Petersen et al., 2023).

Nevertheless, although earlier research has highlighted the beneficial impact of family and friend support on mental health, conflicting outcomes have emerged from

other studies. On one hand, some studies have indicated that having supportive friends does not necessarily protect adolescents from mental health difficulties (Bhui et al., 2017; Brendgen & Poulin, 2018). On the other hand, additional research has indicated that family support does not significantly mitigate internalizing and externalizing problems among all adolescents (Garipey et al., 2016). While variations across studies may partly stem from differences in the measurement tools used to assess social support, a significant factor is the dynamic and fluctuating nature of relationships during adolescence (Garipey et al., 2016). Besides these inconsistencies, existing research has demonstrated that the association between perceived social support and different mental health indicators may be mediated by additional factors (Acoba, 2024).

School belonging represents a central component of school adjustment and refers to students' subjective sense of being accepted, respected, included, and supported within the school environment (Goodenow & Grady, 1993). A strong sense of belonging reflects adolescents' emotional and relational integration into the school context and has been consistently associated with positive developmental outcomes (Allen et al., 2016). Supportive school environments that foster positive peer relationships and satisfy adolescents' needs for relatedness and competence are consistently associated with a stronger sense of school belonging (Ryan & Deci, 2000; Allen et al., 2018). Research has indicated that higher levels of school belonging during adolescence are associated with better psychological adjustment, fewer physical symptoms, and better grades (Vang & Nishina, 2022), lower levels of depressive symptoms (Haddadi Barzoki, 2024), as well as greater academic achievement and emotional well-being (Song et al., 2024). In the digital era, adolescents' sense of belonging extends beyond the school context to online social environments, and evidence suggests that low school belonging combined with high online belonging is linked to psychosocial maladjustment, potentially via heightened social media addiction (Fabris et al., 2024).

Given the significant psychosocial implications of school belonging, there is growing attention toward implementing programs that enhance students' sense of belonging (Sanders & Munford, 2016) and identifying the key determinants (Högberg et al., 2021). For instance, adolescents who perceive stronger support from family and friends tend to report greater school belonging (Tomás et al., 2020; Vargas-Madriz & Konishi, 2021). In line with this, prior studies have shown that higher levels of school belonging are associated with lower levels of internalizing and externalizing problems among adolescents (Yıldırım et al., 2023).

However, although the associations between social support and school belonging, and between school belonging and mental health, have been well documented, increasing attention has been devoted to examining theoretically specified indirect associations involving school belonging. In the present study, school belonging was conceptualized as a key indicator of school adjustment linking perceived social support with adolescents' emotional, behavioral, and social functioning. Additionally, existing studies have often overlooked the distinct roles of perceived social support from family

versus friends. This distinction is important, as different sources of support may show distinct associations with adolescent well-being. Moreover, prior research has largely examined the relationship between perceived social support and mental health in broad terms, with limited attention to specific psychosocial components. For example, internalizing problems (such as emotional difficulties and peer-related issues) and externalizing problems (including hyperactivity and behavioral challenges) have not been thoroughly examined in relation to perceived social support. Similarly, prosocial behaviors have received comparatively less attention within this line of research. To address these gaps, the present study examined the associations between distinct sources of perceived social support, school belonging, and specific psychosocial outcomes in early adolescence.

The present study extends the existing literature in several important ways. First, it examines school belonging as a proximal school-related factor that may help explain the associations between perceived social support and distinct emotional-behavioral outcomes during early adolescence, a developmental period characterized by substantial changes in social relationships and school adjustment. Second, unlike much previous research, which has examined adolescent mental health as a broad construct, this study differentiates between internalizing problems, externalizing problems, and prosocial behavior, providing a more nuanced understanding of psychosocial functioning. Third, the study considers multiple sources of perceived social support (family, friends, and significant others), offering further insight into their potentially distinct associations with adolescent adjustment. Finally, by focusing on adolescents in the Turkish cultural context, this research contributes culturally relevant evidence regarding the interplay between social support, school belonging, and psychosocial functioning in a context that has received comparatively less attention in the literature. Drawing on ecological systems theory, self-determination theory, and previous empirical findings, the following hypotheses were proposed:

H1. Perceived social support from family, friends, and significant others is negatively associated with adolescents' internalizing problems.

H2. Perceived social support from family, friends, and significant others is negatively associated with adolescents' externalizing problems.

H3. Perceived social support is positively associated with adolescents' prosocial behavior.

H4. Perceived social support from family, friends, and significant others is positively associated with adolescents' sense of school belonging.

H5. Sense of school belonging is negatively associated with internalizing and externalizing problems and positively associated with prosocial behavior.

H6. Indirect associations between perceived social support and psychosocial outcomes through school belonging were expected.

Method

Following Kline's (2023) recommendation that the sample size for path analysis should be at least 10 times the number of estimated parameters, the minimum required sample size was 780 participants. To increase statistical power and account for potential attrition, we increased the sample size to 807 participants. The final sample included 807 volunteer students from middle schools in Istanbul, Turkey, selected through convenience sampling. A total of 807 seventh and eighth-grade students (373 boys and 434 girls) with a mean age of 13.13 years and an age range of 11 to 14 were included in our study. Among them, 104 were immigrants (35 girls and 69 boys), 692 were Turkish, and nationality data were missing for 11 participants. Of the participants, 562 (69.6%) were enrolled in public schools, while 245 (30.4%) were in private schools. The breakdown by school type showed that 236 (29.2%) attended girls' schools, 212 (26.3%) attended boys' schools, and 290 (35.9%) attended mixed-gender schools. Additionally, 69 participants (8.6%) attended the same school but were in separate classes for girls and boys.

First, ethical approval was obtained from the Ibn Haldun University Institutional Review Board. Then, the Istanbul Provincial Directorate of National Education was contacted, and the research instruments, procedures, and processes were submitted in writing. Upon receiving written permission, middle school principals were approached, and meetings were held to discuss the project. Schools that agreed to participate were selected as candidates. An invitation letter explaining the study's purpose and process was sent to parents, who were asked to sign a parental consent form if they agreed to participate. Professional school counselors administered the paper-and-pencil questionnaires to the students. Participants were informed about the voluntary nature of the study and assured of confidentiality. They were instructed not to write their names or any identifiable information on the questionnaires and to place the completed surveys in an envelope on the classroom table. Completion of the questionnaires took approximately one class period (40 minutes). School counselors were available to provide assistance or explanations as needed. Data collection was conducted simultaneously across all schools during the 2022-2023 academic year. Participation was voluntary, and students did not receive any incentives or penalties based on their participation. The data were collected using the following instruments:

Perceived social support: We administered the Multidimensional Scale of Perceived Social Support (MSPSS) to assess perceived social support from three sources, family, friends and significant other. The MSPSS was developed by Zimet et al. (1988), and Başol (2008) translated and adapted it to be suitable for Turkish people. It consists of 12 items, with each subscale containing 4 items, rated on a 7-point Likert scale ranging from 'very strongly disagree' (1) to 'very strongly agree' (7). Each subscale score was calculated as the mean of its four items, yielding mean scores ranging from 1 to 7, with higher scores indicating greater perceived social support. The MSPSS has demonstrated good internal consistency, test-retest reliability, and construct validity (Başol, 2008;

Zimet et al., 1988). Example items include “My family really tries to help me” or “I can talk about my problems with friends”. Cronbach’s alpha values for the total scale and subscales (family, friends, significant others) in this study were 0.86, 0.72, 0.68, and 0.67, respectively.

School belonging: School belonging was assessed using the Turkish version of the Psychological Sense of School Membership Scale (PSSM), originally developed by Goodenow (1993) and translated and validated by Sari (2012). The scale assesses the extent to which students perceive themselves as accepted, respected, included, and valued members of their school community. The PSSM consists of 18 items rated on a 5-point Likert scale ranging from 1 (not at all true) to 5 (completely true). Five negatively worded items (Items 3, 6, 9, 12, and 16) were reverse scored. In the present study, only the total PSSM score was used in all analyses. Item scores were summed to obtain a total score ranging from 18 to 90, with higher scores indicating a stronger sense of school belonging. Representative items include “Most teachers at this school are interested in me,” “I feel like a real part of this school,” “People here notice when I’m good at something,” and “Other students in this school take my opinions seriously.” Previous studies have demonstrated satisfactory reliability and validity of the PSSM across different cultural contexts, with Cronbach’s alpha coefficients ranging from .71 to .94 (Cheung, 2004; Goodenow, 1993; Sari, 2012). In the present study, Cronbach’s alpha for the total scale was .70.

Internalizing, externalizing and prosocial behaviors: We used the self-report version of the Strengths & Difficulties Questionnaire (SDQ), developed by Goodman (1997) and translated into Turkish by Güvenir et al. (2008), to measure emotional and behavioral problems. The SDQ assesses behavioral problems and strengths to assist in the early diagnosis and intervention of developmental, emotional, and behavioral issues. It consists of 25 items divided into five subscales: Emotional Symptoms, Conduct Problems, Hyperactivity/Inattention, Peer Relationship Problems, and Prosocial Behavior. In the present study, internalizing problems were computed by combining the Emotional Symptoms and Peer Relationship Problems subscales, whereas externalizing problems were calculated by combining the Conduct Problems and Hyperactivity/Inattention subscales. The prosocial behavior subscale was analyzed as an independent outcome. Each item is scored on a 3-point Likert scale (0 = not true, 1 = somewhat true, 2 = certainly true), resulting in a total difficulty score and a prosocial score. A small number of items are reverse-scored. The total difficulties score is obtained by adding the scores for all but the prosocial behavior scale. The possible range of scores for each of the subscales is 0–10, and for the total difficulties score it is 0–40. Cut-off scores distinguishing normal, borderline, and abnormal adjustment vary between informant versions, and across subscales and the total difficulties score. The SDQ has demonstrated good psychometric properties, including reliability and validity, across different cultures (Bourdon et al., 2005; Goodman, 1997; Güvenir et al., 2008). Example items include “I try to be nice to other people” (Prosocial Behavior), “I am often unhappy, depressed, or tearful” (Emotional Symptoms), or “I am restless, I cannot

stay still for long” (Hyperactivity/Inattention). Cronbach’s alpha values for the total scale and subscales (internalizing, externalizing, prosocial) in this study were 0.71, 0.73, 0.72, and 0.69, respectively.

The data were analyzed using SPSS 27 and AMOS 24. The normality of the study variables was assessed before statistical analyses were conducted. The findings demonstrated that all variables followed a normal distribution. The analyses were conducted in several steps. First, the descriptive statistics and correlation coefficients between the variables were analyzed. Second, path analysis was conducted to examine the relationships between perceived social support and internalizing problems, externalizing problems, and prosocial behaviors, as well as the indirect associations through school belonging. Bias-corrected bootstrap analyses with 5000 resamples were conducted to estimate the 95% confidence intervals (CIs) for the indirect effects. Model fit was evaluated using the following criteria: CMIN/DF < 5, RMSEA < .05, and GFI, CFI, IFI, and AGFI > .90.

Results

Initially, data screening was conducted. There were no missing values. The boxplot indicated that there were no univariate outliers. Based on Mahalanobis distance, no multivariate outliers were identified. Univariate normality was examined using skewness and kurtosis values. Both indices fell within the range of ± 2 . Multicollinearity was assessed using variance inflation factors (VIFs), which ranged from 1.26 to 2.51. The Durbin-Watson statistic was 1.93, indicating that the assumption of independent errors was satisfied.

Table 1 shows the descriptive statistics and Pearson correlation coefficients among the study variables. The results indicated that support from family, friends, and others, school belonging, and prosocial behaviors were positively correlated with each other. In contrast, these variables were negatively correlated with internalizing and externalizing problems (all $ps < .001$).

Table 1. Descriptive statistics and Pearson correlations of the study variables ($n = 807$).

Variables	1	2	3	4	5	6	7
1. Perceived support- Family	1						
2. Perceived support- Friends	0.67**	1					
3. Perceived support- Others	0.47**	0.66**	1				
4. School belonging	0.40**	0.37**	0.38**	1			
5. Internalizing problems	-0.27**	-0.28**	-0.29**	-0.45**	1		
6. Externalizing problems	-0.18**	-0.13**	-0.24**	-0.33**	0.36**	1	
7. Prosocial behaviors	0.17**	0.15**	0.16**	0.26**	-0.12**	-0.30**	1
Mean	4.66	4.16	5.01	62.06	6.27	6.94	7.82
Standard Deviation	1.44	1.55	1.31	12.30	3.50	2.97	1.68

**P < 0.01; *P < 0.05

No statistically significant differences were found in internalizing problems, externalizing problems, or prosocial behavior across gender, immigrant status, school type, or school sector (public vs. private) (all $p > .05$).

Path analysis was employed to examine the role of school belonging in the relationship between perceived support from family, friends, and others, and internalizing problems, externalizing problems, and prosocial behaviors. The hypothesized model was first estimated to examine the direct associations among perceived social support, school belonging, and the outcome variables. The hypothesized model showed poor fit to the data (CMIN/DF = 30.53, RMSEA = 0.19, GFI = 0.97, CFI = 0.94, IFI=0.95, AGFI = 0.72). Perceived family support was not significantly associated with internalizing ($\beta = -0.03$, $P > 0.05$), externalizing problems ($\beta = -0.08$, $P > 0.05$), or prosocial behaviors ($\beta = 0.06$, $P > 0.05$). Perceived support from friends was not significantly associated with school belonging ($\beta = 0.03$, $P > 0.05$), internalizing problems ($\beta = -0.06$, $P > 0.05$), or prosocial behaviors ($\beta = -0.01$, $P > 0.05$). Modification indices suggested correlated residuals between internalizing and externalizing problems (MI = 45.75) and between externalizing problems and prosocial behavior (MI = 40.31). Accordingly, a revised model was estimated by removing nonsignificant paths and allowing these theoretically justifiable residual covariances (Figure 1). The revised model fit was excellent with CMIN/DF = 1.20, RMSEA = 0.02, GFI = 0.99, CFI = 0.99, IFI= 0.99, AGFI = 0.99.

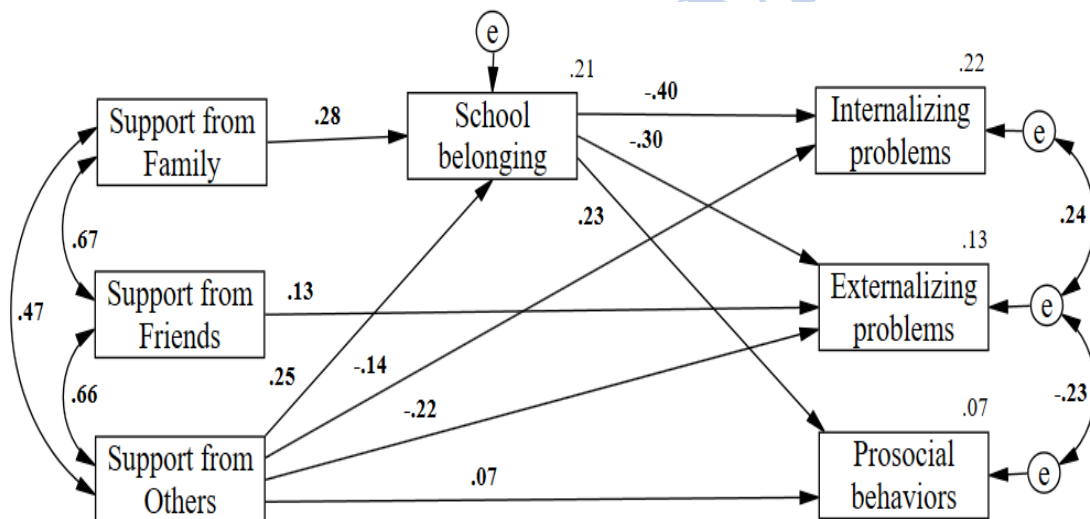


Figure 1. The revised mediation model

Figure 1 presents the final path model. Perceived family support was positively associated with school belonging ($\beta = 0.28$). Perceived support from friends was positively associated with externalizing problems ($\beta = 0.13$). Perceived support from significant others was positively associated with school belonging ($\beta = 0.25$) and prosocial behaviors ($\beta = 0.07$), and negatively associated with internalizing ($\beta = -0.14$) and externalizing problems ($\beta = -0.22$). Furthermore, school belonging was negatively associated with internalizing ($\beta = -0.40$) and externalizing problems ($\beta = -0.27$), and positively associated with prosocial behaviors ($\beta = 0.23$). Subsequently, the indirect associations between perceived support from family, friends, and significant others and

internalizing problems, externalizing problems, and prosocial behaviors through school belonging were examined (Table 2).

Table 2. Indirect effects of PSS on Int and Ext Probs and prosocial behaviors

Indirect paths	b	β	S.E	Boot LLCI	Boot ULCI
Perceived support- Family → School belonging → Internalizing problems	-0.28	-0.11**	0.04	-0.15	-0.08
Perceived support- Family → School belonging → Externalizing problems	-0.17	-0.08**	0.03	-0.12	-0.06
Perceived support- Family → School belonging → Prosocial behaviors	0.08	0.07**	0.02	0.04	0.10
Perceived support- Others → School belonging → Internalizing problems	-0.27	-0.10**	0.04	-0.10	-0.07
Perceived support- Others → School belonging → Externalizing problems	-0.17	-0.07**	0.03	-0.13	-0.05
Perceived support- Others → School belonging → Prosocial behaviors	0.07	0.06**	0.02	0.04	0.08

Note: b= unstandardized effects; β = standardized effects; S.E= bootstrap standard errors; LLCI = Lower limit confidence interval; ULCI = Upper limit confidence interval; **P<0.001

Table 2 shows that the indirect effects of perceived support from family on internalizing problems ($\beta = -0.11$), externalizing problems ($\beta = -0.08$), and prosocial behaviors ($\beta = 0.07$) are significant. the indirect effects of perceived support from others on internalizing problems ($\beta = -0.10$), externalizing problems ($\beta = -0.07$), and prosocial behaviors ($\beta = 0.06$) are significant, also. All indirect effects are statistically significant ($P < 0.001$). Perceived support from family, friends, and significant others could explain 21% of the variance in school belonging. The explained variance of internalizing problems, externalizing problems, and prosocial behaviors based on perceived social support and school belonging was 22%, 14%, and 7%, respectively.

Discussion

The findings of this study underscore the critical role of perceived social support in shaping adolescents' emotional and behavioral outcomes. Family support was positively associated with school belonging, and the revised model showed significant indirect associations between family support and psychosocial outcomes via school belonging. While support from friends contributed directly to externalizing problems, support from significant individuals played a more complex role, positively influencing school belonging and prosocial behaviors while simultaneously reducing both internalizing and externalizing problems. Additionally, school belonging was associated with lower internalizing and externalizing problems and higher prosocial behavior. The observed indirect associations are consistent with the proposition that school belonging may represent an important relational correlate linking perceived social support with

psychosocial outcomes. These findings will be discussed in greater depth in the following sections.

It is also noteworthy that several hypothesized direct associations were not statistically significant in the initial model, including the direct associations of family support with internalizing problems, externalizing problems, and prosocial behavior, as well as the associations of friend support with school belonging, internalizing problems, and prosocial behavior. These findings suggest that, within the present cross-sectional model, these sources of perceived support were not directly associated with the corresponding psychosocial outcomes beyond the associations accounted for by the other variables in the model. Therefore, these nonsignificant paths were omitted in the revised model to obtain a more parsimonious representation of the observed associations. Nevertheless, these findings should be interpreted cautiously and warrant replication in independent samples.

These findings should also be interpreted within the Turkish educational and sociocultural context. Turkish society has traditionally been characterized by relatively collectivistic family values, in which close family relationships, interdependence, and parental involvement remain central to adolescents' development. Within such a context, perceived family support may be more strongly associated with adolescents' sense of school belonging because supportive family relationships may facilitate trust in school, engagement with teachers, and adaptation to the school environment (Kağıtçıbaşı, 2007; Kağıtçıbaşı & Ataca, 2005). Furthermore, the present sample included both Turkish and immigrant adolescents attending public and private middle schools in Istanbul. Previous research has highlighted school belonging as an important school-related context linking social support with adolescent adjustment. Vargas-Madriz and Konishi (2021), for example, demonstrated that school belonging was involved in the association between social support and academic involvement among secondary school students. This role may be particularly meaningful for immigrant adolescents, for whom schools can provide opportunities to develop supportive peer and teacher relationships and foster social inclusion and psychological adjustment (Kia-Keating & Ellis, 2007).

Perceived family support was positively associated with school belonging, and significant indirect associations with internalizing problems, externalizing problems, and prosocial behavior were observed through school belonging in the revised model. This aligns with previous research emphasizing the positive associations of family support with adolescent adjustment (Mancini et al., 2016; van Meegen et al., 2024; Xin et al., 2024). Higher perceived family support has consistently been associated with stronger school belonging in previous studies (Li & Li, 2024). One possible explanation is that adolescents who perceive greater family support may also report better emotional adjustment, which is associated with stronger feelings of belonging at school (Lyell et al., 2020).

The positive association between perceived friend support and externalizing problems should be interpreted cautiously, particularly because the zero-order correlation between these variables was negative. This pattern may reflect the

partitioning of shared variance (i.e., a suppression effect) after controlling for family support and support from significant others, rather than indicating that friend support increases externalizing behavior. One possible explanation is that adolescents who perceive greater support from peers may also be embedded in peer groups in which risk-taking or disruptive behaviors are socially reinforced (Fortuin et al., 2015). Alternatively, adolescents with higher levels of externalizing behavior may be more likely to affiliate with peers who provide support while sharing similar behavioral characteristics. Because the present study is cross-sectional, the direction of these associations cannot be determined. From an ecological standpoint (Bronfenbrenner, 2005), peer groups function as influential microsystems that may either buffer or exacerbate maladaptive behaviors, depending on prevailing norms and values. Thus, the unique association of friend support with externalizing problems should be interpreted with caution and warrants further investigation.

Support from significant others was associated with higher school belonging and prosocial behavior and with lower internalizing and externalizing problems. Theoretically, these individuals may be viewed as important developmental assets who provide emotional support, guidance, and positive role models across family and school contexts, thereby promoting adolescents' sense of competence, connectedness, and positive development (Beam et al., 2002; Bowers et al., 2014).

The results align well with Ecological Systems Theory (Bronfenbrenner, 2005), which posits that different layers of social influence interact to shape adolescent development. Family, friends, and significant others represent micro-level social systems that influence emotional adjustment, school belonging, and behavioral regulation. According to social learning theory, adolescents who receive consistent emotional support from family, friends, or significant others are more likely to adopt and exhibit similar altruistic and prosocial behaviors in their interactions. Recent longitudinal research has documented this connection, demonstrating that adolescents with strong social support networks tend to engage in more prosocial behaviors (van Meegen et al., 2024). A six-year study of Dutch adolescents found that those with supportive family members and friends who modeled prosocial behavior exhibited higher levels of such behaviors themselves (van Meegen et al., 2024). Adolescents who report stronger social support also tend to report greater sense of acceptance and emotional security, which facilitates open communication and emotional expression. This increased psychological stability serves as a protective factor, reducing the likelihood of emotional and behavioral difficulties. The role of school belonging as a mediator aligns with Self-Determination Theory (Ryan & Deci, 2000), which highlights the importance of relatedness in fostering well-being and engagement in social environments.

Our findings support the indirect associations between perceived social support and psychosocial outcomes through school belonging in the revised cross-sectional model. Adolescents reporting higher perceived support from family and significant others also

tended to report higher school belonging, which was, in turn, associated with more favorable psychosocial outcomes. This finding aligns with previous research (Tomás et al., 2020; Vargas-Madriz & Konishi, 2021). Adolescents who perceive stronger social support from friends, family, and significant others also tend to report greater feelings of security and more positive relationships across different contexts, including school. Such perceptions of support may be associated with stronger feelings of self-worth and usefulness within the school setting, contributing to a greater sense of school belonging.

School belonging was negatively associated with internalizing and externalizing problems and positively associated with prosocial behaviors. Theoretically, when adolescents perceive their school as a supportive and inclusive environment, they are more likely to internalize school norms, regulate emotional responses, and engage in cooperative and altruistic behaviors. Conversely, low school belonging may heighten emotional distress and behavioral dysregulation by undermining adolescents' sense of social value and institutional trust. These findings are consistent with Goodenow and Grady's (1993) conceptualization of school belonging and align with later evidence demonstrating that higher school belonging is associated with better psychological adjustment and fewer emotional and behavioral difficulties (Allen et al., 2018; Vang & Nishina, 2022).

A particularly noteworthy finding is that family support showed significant indirect associations with psychosocial outcomes via school belonging in the revised cross-sectional model. This pattern is consistent with the possibility that adolescents who perceive greater family support also report stronger feelings of security and connection, which may be reflected in higher levels of school belonging. Accordingly, the associations between family support and psychosocial outcomes may depend, at least in part, on adolescents' reported sense of belonging at school. This interpretation is broadly consistent with the Bioecological Model of Human Development (Bronfenbrenner & Morris, 2007), which emphasizes the dynamic interplay among developmental contexts such as family and school. Previous studies (e.g., Wilkinson-Lee et al., 2011; Yao, 2024) have likewise reported that adolescents with stronger family relationships and higher school belonging tend to report more favorable emotional adjustment, highlighting the potential importance of school belonging in the association between family support and adolescent functioning.

The observed pattern of associations is also broadly consistent with Self-Determination Theory (Ryan & Deci, 2000), which identifies relatedness as a fundamental psychological need for well-being. From this perspective, adolescents who report greater family support and stronger school belonging may also report more favorable emotional and behavioral functioning. Moreover, Social Support Theory (Cohen & Wills, 1985) provides a useful framework for understanding why different sources of perceived support may show distinct associations with adolescent psychosocial functioning. Family support is generally associated with emotional stability, whereas peer and school-based sources of support may operate in complementary ways. One possible explanation for the positive association between

friend support and externalizing problems is that peer processes may reinforce as well as challenge behavioral norms, depending on the characteristics of the peer group. This interpretation is consistent with previous research suggesting that peer relationships during adolescence may be associated with both adaptive and maladaptive behavioral outcomes (Fortuin et al., 2015).

This study offers novel insights into the relationships between perceived social support, school belonging, and adolescent behavioral outcomes, highlighting the mediating role of school belonging. Unlike prior research that primarily examined direct associations between social support and psychosocial outcomes, this study examined whether school belonging was indirectly associated with these relationships. The findings suggest that family support showed no significant direct associations with psychosocial outcomes but demonstrated significant indirect associations through school belonging. Similarly, perceived support from significant others was indirectly associated with psychosocial outcomes through school belonging while also showing direct associations with several outcomes. Although the present findings cannot establish causal or intervention effects because of the cross-sectional design, they suggest that school belonging is positively associated with adolescents' psychosocial adjustment. Therefore, interventions aimed at strengthening students' sense of school belonging and supportive relationships with family, peers, and significant others may contribute to more favorable psychosocial outcomes. However, the effectiveness of such interventions should be evaluated in longitudinal and experimental studies before causal conclusions can be drawn.

This study has several limitations. First, the use of convenience sampling may introduce selection bias, potentially limiting the representativeness of the sample. Additionally, the cross-sectional nature of the study prevents causal interpretations, as the relationships observed cannot confirm longitudinal effects. The reliance on self-report instruments may be subject to social desirability bias, influencing participants' responses regarding their experiences of support and school belonging. Furthermore, as the study was conducted in one area of Istanbul, the findings may not be generalizable to adolescents in other regions or cities with varying socio-cultural contexts. Another limitation is the lack of control for demographic variables, such as socioeconomic status, academic performance, and cultural background, which may shape adolescents' perceptions of social support and behavioral tendencies.

An additional point concerns the model modification process. The revised model included theoretically justifiable residual covariances between internalizing and externalizing problems and between externalizing problems and prosocial behavior. These residual covariances are conceptually plausible because the outcome variables were derived from different subscales of the same instrument (SDQ) and are known to share variance beyond that explained by the structural paths. Furthermore, the three perceived social support variables were specified as correlated exogenous variables, consistent with both theory and conventional path-analytic practice. Although these

modifications substantially improved model fit, they should be regarded as theory-guided post hoc refinements rather than a priori hypotheses. Accordingly, replication and cross-validation of the revised model in independent samples are recommended.

Future research should address these limitations by employing longitudinal designs to clarify the temporal ordering and direction of the associations among perceived social support, school belonging, and adolescent psychosocial outcomes. Expanding the sample to diverse geographic regions and including adolescents from different educational settings could enhance generalizability. Additionally, integrating multi-informant assessments, such as parent, teacher, or peer reports, may provide a more comprehensive understanding of social support dynamics. Another important direction for future research is to examine alternative measurement and structural models of perceived social support. Given the moderate to high correlations among family, friend, and significant-other support, future studies could compare source-specific models with higher-order or bifactor models to determine whether associations with adolescent psychosocial outcomes primarily reflect a general perceived social support factor or distinct effects attributable to different support sources. Further research could also explore cultural variations in school belonging and social support effects, considering how different cultural norms shape adolescent relationships and behavioral responses. Investigating potential moderators, such as personality traits or coping strategies, could deepen the understanding of individual differences in how social support is associated with developmental outcomes.

The findings of this study highlight significant associations between perceived social support, school belonging, and adolescent emotional and behavioral outcomes. Higher perceived support from family and significant others was associated with stronger school belonging, which was, in turn, associated with lower internalizing and externalizing problems and higher prosocial behaviors. Interestingly, perceived friend support was directly associated with higher externalizing problems, highlighting the complex role of peer relationships. The significant indirect associations observed in the revised cross-sectional model are consistent with the proposition that school belonging may represent an important relational context linking perceived social support with adolescents' psychosocial functioning. Overall, this study advances the literature by providing a more differentiated understanding of how distinct sources of perceived social support are associated with adolescents' psychosocial functioning within the broader context of school belonging.

Ethical Considerations

Compliance with ethical guidelines: An ethical permission form was obtained from the Ibn Haldun University Institutional Review Board prior to conducting this study (Approval Number: 2020/03-2). All participants were informed about the purpose and procedures of the study and provided their informed consent prior to participation.

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