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The Mediating Role of Loneliness, Alcohol Use, and Smoking in the Relationship Between Bullying Victimization and School Belonging among Adolescents

Abstract: Bullying victimization among adolescents has been linked to various negative outcomes, including a diminished sense of belonging to school. This study investigates the mediating roles of loneliness, alcohol use, and smoking in the relationship between bullying victimization and adolescents' sense of belonging to school among adolescents. The current study utilized a sample of 1147 adolescents and employed correlation analysis and mediation analyses using the process macro for SPSS. Participants reported their experiences of bullying victimization, levels of loneliness, alcohol use, smoking behaviors, and sense of belonging to school. The results of the study indicated a significant negative correlation between bullying victimization and adolescents' sense of belonging to school. Moreover, loneliness, alcohol use, and smoking were found to mediate this relationship, suggesting that these factors play a role in shaping adolescents' perceptions of school belonging in the context of bullying victimization. The findings of this study have important implications for interventions aimed at addressing bullying victimization and promoting adolescents' sense of belonging to school. Strategies that target loneliness, alcohol use, and smoking behaviors may help mitigate the adverse effects of bullying on school belonging. School-based programs should focus on fostering a supportive and inclusive environment to enhance adolescents' well-being and sense of belonging.

Keywords: *bullying victimization, school belonging, loneliness, alcohol use, smoking.*

INTRODUCTION

School belonging is a critical factor in the well-being and development of adolescents. It signifies the extent to which students feel accepted, respected, and supported within their school environment. Research has demonstrated that a sense of school belonging serves as a protective mechanism against negative psychological outcomes for adolescents (Anderman, 2002). Adolescents who feel a strong connection to their school are more likely to achieve positive health outcomes and demonstrate improved behavioral performance (Zhang et al., 2022). Additionally, school belonging has been associated with a range of advantageous outcomes for adolescents, including academic success, psychological well-being,

and social and emotional development (McCahey et al., 2021). Nurturing a sense of belonging in schools is crucial for fostering positive youth development and overall adolescent health. Furthermore, school belonging not only influences individual well-being but also has broader impacts on adolescents' lives. Studies have shown that school belonging is linked to academic achievement, reduced engagement in risk-taking behaviors, and enhanced decision-making skills among adolescents (Renick & Reich, 2020). Moreover, a strong sense of belonging in school has been identified as a protective factor against negative outcomes such as suicidal ideation, teen pregnancy, and violence (Nuttman-Shwartz, 2018). Teachers play a significant role in shaping adolescents' sense of school belonging, and disruptions in teacher-student



relationships can have adverse effects on adolescents' behavioral, psychological, and academic development (Huynh & Gillen-O'Neel, 2016). Overall, the literature emphasizes the significance of school belonging in adolescents' lives, underscoring its role in promoting positive outcomes and mitigating risks associated with adolescence.

Bullying victimization in adolescents has been extensively linked to adverse mental health outcomes. The effects of bullying victimization on mental health can be severe, leading to symptoms such as self-harm, violent behavior, and even psychotic symptoms. Adolescents who are victims of bullying tend to experience higher levels of mental health issues, worse mental health outcomes, and lower social status compared to non-victim adolescents (Tarafa et al., 2022). The link between experiencing bullying and mental health challenges among adolescents has been widely acknowledged. Research underscores the enduring and harmful consequences of such victimization on young people's emotional well-being (Ashrafi et al., 2020). Additionally, bullying has been shown to significantly impact various facets of adolescents' mental health. Studies suggest that being bullied can lead to internalized mental health difficulties among youth, including anxiety, depression, and stress (Rodriguez et al., 2020). This correlation between bullying and mental health issues transcends cultural boundaries, as evidenced by research among Chinese adolescents, which also highlights the connection between bullying and adverse mental health outcomes (Zhang et al., 2020). Adolescents involved in bullying, either as victims or perpetrators, have been shown to have higher odds of behavioral conduct problems, depression, and difficulties in social interactions, emphasizing the broad and profound effects of bullying on mental health in this age group (Hysing et al., 2019). Moreover, the effects of bullying victimization on adolescents' mental health can be long-lasting and pervasive. Bullying victimization has been found to impact school outcomes, leading to decreased school engagement, lower academic performance, and a higher incidence of emotional and behavioral problems (Hong et al., 2022). Overall, the evidence suggests that bullying victimization in adolescents is a serious concern that can have lasting implications for their mental well-being and overall development.

Loneliness in adolescents is characterized by the subjective feeling of social isolation or disconnectedness, where individuals perceive a lack of meaningful social relationships or connections. This emotional state can significantly impact mental health, with prolonged or chronic loneliness increasing the risk of various mental health issues (Roekel et al., 2013). Studies have demonstrated that loneliness can disrupt social, cognitive, and physiological developmental processes, affecting overall well-being. Adolescents experiencing loneliness may display symptoms of anxiety, depression, and low self-esteem, highlighting the negative effects of this emotional state on mental health (Cole et al., 2021). Understanding the developmental trajectory of loneliness in adolescents is

crucial for implementing effective interventions to support their mental health and social adjustment (Christiansen et al., 2021). Furthermore, the impact of loneliness on adolescents extends beyond immediate psychological effects and can have long-term consequences on their overall well-being. Research suggests that experiencing loneliness during adolescence increases the chances of developing mental health problems later in life (Maes et al., 2015). Adolescents who experience chronic loneliness may also be at a greater risk of engaging in health risk behaviors and experiencing difficulties in psychosocial functioning (Goossens, 2018). Therefore, addressing loneliness in adolescents is vital for promoting positive mental health and well-being, emphasizing the importance of interventions targeting social connections, emotional support, and coping mechanisms to mitigate the adverse effects of loneliness on school belonging.

Adolescent smoking and alcohol use are behaviors influenced by various factors, including parental influence and peer interactions. Alcohol use and smoking among adolescents pose significant concerns for both individual health and academic success. Engaging in these behaviors at a young age can lead to a myriad of negative consequences, including impaired cognitive function, decreased academic performance, and heightened risk of developing addiction later in life (Morales et al., 2020). Research by Oliveira et al. (2018) highlights the significant association between parental smoking and adolescents' use of alcohol and illicit drugs, even among non-smoking adolescents. This suggests that parental behavior, particularly smoking, can impact adolescents' engagement in substance use. Additionally, studies like that of Urberg et al. (1997) emphasize the influence of close friends and friendship groups on adolescent cigarette smoking and alcohol use, indicating that peer relationships play a crucial role in shaping these behaviors among adolescents. Moreover, studies like Andrade et al. (2017) demonstrate that adolescent smoking is not only associated with parental smoking but also with individual characteristics such as age, study habits, and alcohol consumption. This suggests a multifaceted relationship between personal attributes and external influences on adolescent smoking and alcohol use. Furthermore, Andrade et al. (2017) have highlighted the impact of smoking and alcohol use on adolescent behavior, indicating that these behaviors can further exacerbate feelings of isolation and detachment from the school environment. Therefore, fostering a supportive and inclusive school environment is crucial for promoting positive school adjustment and mitigating the potential harms associated with substance use among adolescents.

PRESENT STUDY

Research on the relationship between bullying victimization, loneliness, alcohol and cigarette use, and school belonging in adolescents is crucial for several reasons. Firstly, understanding how these factors interplay can provide insights into the complex dynamics that

influence adolescent mental health. Studies have shown that bullying victimization is associated with increased feelings of loneliness, substance use, and mental health issues among adolescents (Elledge et al., 2018). By investigating the connections between these variables, researchers can identify potential risk factors and protective factors that impact adolescent well-being. Secondly, exploring the role of school belonging in this context is essential as it can shed light on the significance of creating a supportive and inclusive school environment. Research has indicated that school connectedness plays a vital role in adolescent mental health outcomes, emphasizing the importance of fostering positive relationships within the school setting (Shochet et al., 2006). Moreover, the findings from research on bullying victimization, loneliness, alcohol and cigarette use, and school belonging can have significant implications for interventions aimed at promoting adolescent mental health and school belonging. By implementing strategies that enhance school connectedness and support systems for adolescents who experience bullying, schools can potentially create a more positive and nurturing environment that fosters both mental well-being and a sense of belonging among students. Hence, the primary objective of this study is to investigate the mediating role of loneliness, alcohol use, and smoking in the relationship between bullying victimization and adolescents' sense of belonging to school.

METHOD

Participants and procedure

To reach the participants of the study, convenience sampling method was used. The researcher gathered in-person data from certain adolescents involved in the study. Additionally, data from some adolescents were collected through online platforms like Instagram and WhatsApp by making announcements. All adolescents participating in the study provided informed consent. The consent page contained details about the study, including parental consent, objectives, duration, confidentiality, and the voluntary nature of participation. Among the 1170 adolescents who took part in the study, 23 provided incomplete or incorrect information, and their responses were excluded from the analysis. Therefore, a total of 1147 high school adolescents (748 girls (65.2%) and 399 boys (34.8%)) participated. Adolescents who participated in the study were between the ages of 15 and 17 ($M_{age}=15.83$, $SD=.90$).

Multidimensional Bullying Victimization Scale

İme et al. (2020) utilized the Turkish version of a scale originally developed by Harbin et al. (2019). This scale encompasses 24 items categorized into 3 sub-dimensions, employing a 4-point Likert scale ranging from 0 (never) to 3 (very often). For instance, one item reads "They make fun of me." The fit indices for the scale's three sub-dimensions were $\chi^2/df=2.90$, $CFI=.91$, $TLI=.90$, $SRMR=.04$, $RMSEA=.07$. Additionally, the reliability analysis demonstrated an internal consistency coefficient of .95.

School Belongingness Scale

Arslan and Duru (2017) devised the scale aimed at assessing students' sense of belonging within the school environment. This scale consists of 10 items, utilizing a 4-point Likert scale that spans from 1 (almost never) to 4 (almost always). Higher scores on the scale denote a stronger sense of school belonging among students. The scale demonstrates satisfactory psychometric properties, indicating its validity and reliability as a measurement tool. In the current study, the scale exhibited adequate reliability ($\alpha=.90$).

Short Form of UCLA Loneliness Scale

The UCLA Loneliness Scale, initially created by Russell et al. (1980), was adjusted for use in Turkish by Yıldız & Duy (2014). Comprising 7 items in total, this scale evaluates loneliness on a single scale, with responses graded on a 4-point scale (1=never, 4=always). The one-dimensional structure of the scale was validated in its Turkish adaptation, supported by statistical indicators ($\chi^2/df=1.94$, $RMSEA=0.06$, $SRMR=0.03$, $GFI=0.97$, $CFI=0.98$, $NNFI=0.97$). The reliability coefficient Cronbach's alpha was calculated as .82.

Risky Behaviors Scale (RBS)

The Gençtanırım and Ergene (2014) devised a 36-item five-point Likert scale aimed at assessing risky behaviors among adolescents, encompassing six sub-dimensions. These include antisocial behaviors, alcohol use and smoking, self-destructive tendencies, school dropout rates, and eating habits. Higher scores on both the total scale and its sub-dimensions suggest a greater frequency of engaging in risky behaviors. The scale exhibits a total variance explained value of 55.43% and a total internal consistency coefficient of .85, while in the current study, this coefficient was found to be .94.

Statistical Analysis

Before beginning the analysis, several statistical assumption tests were carried out. These included examining correlations between variables and evaluating the characteristics of the scales used. The normal distribution of the data was checked by calculating skewness and kurtosis values. Since the skewness and kurtosis values were within the range of -1.5 to +1.5, it was deduced that the data adhered to a normal distribution (Tabachnick & Fidell, 2013). Initial examination of variable associations was conducted via Pearson correlation analysis. After these preliminary analyses, a mediation model was investigated utilizing the PROCESS macro for SPSS. This model aimed to scrutinize the mediating influences of loneliness, alcohol use, and smoking on the association between bullying victimization and school belonging (Model 4, Hayes, 2017). This method allows for observed variable path analysis based on mediating variables (Hayes, 2017). The mediation model was computed using standardized path estimates (β). To evaluate the significance of indirect effects, 5000 bootstrap samples were employed (95% CI). A bootstrap confidence interval above

or below zero indicates meaningful mediating effects (Hayes, 2017). Data analyses were conducted using SPSS version 28.

RESULTS

Descriptive Statistics

Descriptive statistics and correlation values for the variables are presented in Table 1. School belonging has negative relationships with smoking ($r = -.13, p < .001$), alcohol use ($r = -.21, p < .001$), bullying victimization ($r = -.50, p < .001$) and loneliness ($r = -.78, p < .001$). As expected, smoking has positive relationships with alcohol use ($r = .24, p < .001$), bullying victimization ($r = .11, p < .001$), and loneliness ($r = .06, p < .05$). Also, alcohol use has positive correlations with bullying victimization ($r = .44, p < .001$) and loneliness ($r = .27, p < .001$). Lastly, bullying victimization has positive correlation with loneliness ($r = .50, p < .001$).

Mediational Analyses

As depicted in Figure 1, the direct impact of bullying victimization ($\beta = -.17, p < .001$) on school belonging demonstrated statistical significance. Furthermore, all individual path mediator coefficients were statistically significant ($p < .001$). Notably, the results underscore that bullying victimization exerts a direct and statistically significant influence on loneliness ($\beta = .50, p < .001$), alcohol use ($\beta = .44, p < .001$), and smoking ($\beta = .11, p < .001$). Lastly, the effects of loneliness ($\beta = -.71, p < .001$), alcohol use ($\beta = -.08, p < .05$), and smoking ($\beta = .09, p < .05$) on school belonging were also deemed significant.

Table 2 illustrates the results concerning the indirect impacts of three mediating factors (loneliness, alcohol use, and smoking). Significant confidence intervals, excluding zero, denote significance. The standardized Beta coefficients are detailed in Table 2 (95% CI). To begin, the table delineates the indirect effect of bullying victimization on

Table 1. Descriptive statistics and correlations for the variables.

Variables	M	SD	α	1	2	3	4	5
1.Scholl belonging	2.94	.69	.90	-	-.13**	-.21**	-.50**	-.78**
2. Smoking	1.95	1.04	.93		-	.24**	.11**	.06*
3. Alcohol use	1.17	.44	.94			-	.44**	.27**
4. Bullying victimization	.83	.41	.95				-	.50**
5. Loneliness	1.68	.66	.88					-

** $p < .001$, * $p < .05$

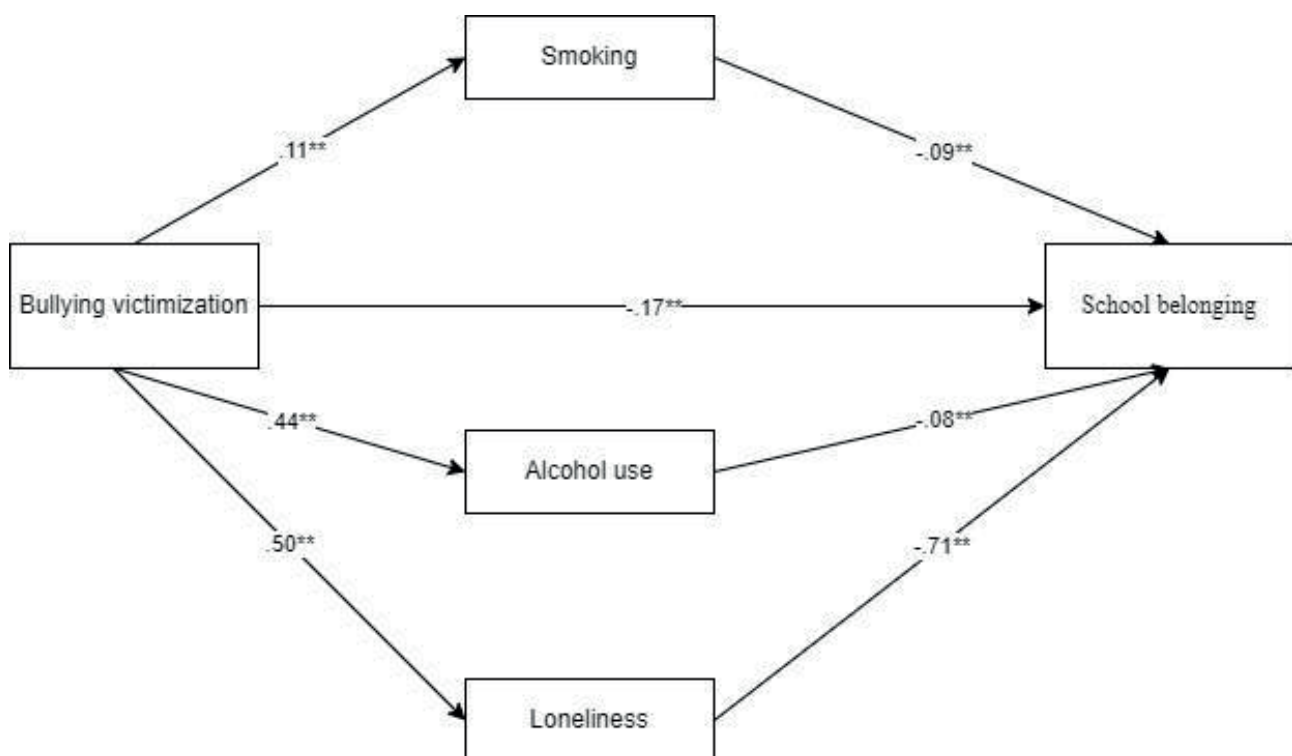


Figure 1. Parallel multiple mediation effect of loneliness, alcohol use, and smoking. ** $p < .001$.

Table 2. Indirect effect of bullying victimization on school belonging via loneliness, alcohol use, and smoking

	Path		Indirect effects	SE	Boot LLCI	Boot ULCI
Bullying victimization	Loneliness	School belonging	-.364	.018	-.402	-.328
Bullying victimization	Alcohol use	School belonging	-.037	.012	-.063	-.015
Bullying victimization	Smoking	School belonging	-.009	.003	-.017	-.004

school belongingness through loneliness ($\beta=-0.364$, $SE=0.018$, $p<.001$), alcohol use ($\beta=-0.037$, $SE=0.012$, $p<.001$), and smoking ($\beta=-0.009$, $SE=0.027$, $p<.001$).

DISCUSSION

Investigating the relationship between bullying victimization in adolescents and their school belonging, loneliness, alcohol use, and smoking is crucial due to the significant impact these factors have on adolescent well-being. Therefore, it has become important to investigate the relations of bullying victimization on school belonging in adolescents. Confirming the research hypothesis, the results revealed a negative correlation between bullying victimization and school belonging. Additionally, loneliness, alcohol use, and smoking were found to mediate the relationship between bullying victimization and school belonging. The results imply that bullying victimization, loneliness, alcohol use, and smoking could potentially serve as risk factors impacting adolescents' sense of school belonging.

First, the findings showed that bullying victimization was a negative predictor of school belonging. Bullying victimization among adolescents has been consistently linked to various negative outcomes, including a decrease in school belongingness. Research by Ding & Zhang (2022) highlighted a negative relationship between bullying victimization and adolescents' quality of life, indicating that being a victim of bullying can significantly impact the overall well-being of adolescents. Additionally, Wright & Wachs (2019) found that low school belongingness moderated the psychological consequences of cyber victimization, emphasizing the importance of school connectedness in mitigating the adverse effects of bullying experiences. Moreover, the study by Spriggs et al. (2007) revealed that bullying involvement was associated with family, peer, and school relations, indicating that bullying victimization can disrupt various social connections crucial for adolescents' sense of belongingness. As bullying intensifies, it can foster feelings of insecurity and anxiety, further distancing students from their peers and educators. This lack of belonging may hinder academic engagement, social development, and overall well-being, creating a cycle where the victimization reinforces a sense of exclusion (Li et al., 2020). Conversely, fostering a supportive and inclusive school culture can help mitigate the negative impact of bullying, promoting a greater sense of belonging for all students (Arslan & Allen, 2021). The findings from these studies collectively suggest that bullying victimization negatively impacts adolescents' school belongingness by disrupting their social relation-

ships and overall well-being. Enhancing school belongingness through supportive environments and interventions may be crucial in mitigating the detrimental effects of bullying victimization on adolescents' mental health and academic outcomes.

According to results of the current study, loneliness plays a mediating role in the relationship between bullying victimization and school belonging among adolescents. Loneliness among adolescents has been consistently linked to various negative outcomes, including a negative relationship with school belonging. Studies have shown that adolescents reporting loneliness are more likely to lack close friendships and experience negative social relationships at school and home (Yang et al., 2020). Furthermore, loneliness has been associated with lower educational ambitions, less interest in school activities, and negative school attitudes (Stickley et al., 2016). This suggests that adolescents who feel lonely may struggle to establish meaningful connections within the school environment, leading to a decreased sense of belonging. Moreover, research has indicated that school loneliness is positively correlated with negative affect and negatively correlated with positive affect and life satisfaction, highlighting the broad implications of loneliness for adolescent well-being (Twenge et al., 2021). Loneliness has also been found to be associated with lower-than-average performance at school, dislike of school, and feeling stressed at school (Qualter et al., 2021). Additionally, a study found that adolescents with low school-belongingness might be at risk for loneliness regardless of their ethnicity, emphasizing the importance of fostering a sense of belonging within the school setting to combat feelings of loneliness (Wright & Wachs, 2019). Overall, addressing feelings of loneliness in adolescents who have been bullied could potentially harm their sense of belonging in the school environment. The more isolated a student feels, the less likely they are to develop a sense of belonging at school, and this lack of connection may diminish their motivation to attend school and participate in the school community.

Lastly, adolescents' engagement with school and their sense of belonging to the educational environment have been found to be inversely related to their use of alcohol use and smoking. Studies have shown that when adolescents exhibit higher levels of school interest, effort, bonding, and future educational plans, they are less likely to engage in concurrent alcohol and cigarette use (Bryant et al., 2003). Furthermore, the association between e-cigarette use and traditional cigarette smoking has been explored, indicating that e-cigarette use is prevalent among adolescents and is linked to both school-related and substance-related risk behaviors (McCabe et al., 2017).

This suggests a complex interplay between school-related attitudes and behaviors and substance use among adolescents, highlighting the importance of fostering a positive school environment to deter alcohol and cigarette consumption. Moreover, the early initiation of substance use, including smoking cigarettes and consuming alcohol, has been associated with psychological distress and risky behaviors among adolescents. Research has shown that early initiation of substance use, particularly before the age of 12, is linked to increased psychological distress among adolescents in various countries (Pengpid & Peltzer, 2019). Additionally, the relationship between substance use initiation and suicidal behavior has been explored, with findings indicating a positive association between early cigarette smoking initiation and suicidal ideation among American adolescents (Peltzer & Pengpid, 2015). Understanding the mediating role of alcohol use and smoking in the relationship between bullying victimization and school belonging underscores the intricate interplay between social experiences, substance use behaviors, and psychological well-being among adolescents (Kim et al., 2018). Recognizing these mediating mechanisms is essential for developing interventions that target the underlying causes of substance use in bullying victims. By acknowledging the mediating role of alcohol and smoking, educators and mental health professionals can implement tailored strategies to support bullied adolescents, encourage healthier coping mechanisms, and improve school belonging to mitigate the negative effects of victimization on students' well-being and academic success.

LIMITATIONS

First, the adolescents participating in the current study consist of high school students. Therefore, the findings should be evaluated in this sample and distinguished from cynical samples. Secondly, the determination of adolescents' levels of bullying victimization, loneliness, alcohol use, smoking, and school belonging is based on their self-assessment. This includes the possibility of responding with social desirability and prejudice. Because the study is cross-sectional, it is not possible to establish a causal relationship between the variables. Also, the present cross-sectional study might overlook individual differences or variability among participants, potentially missing crucial nuances in the data that could be revealed through longitudinal research designs. Lastly, the study did not consider some variables such as social support, resilience, and family dynamics, which could significantly influence the relationship between bullying victimization and school belonging, and future research should explore how these additional variables interact with bullying to influence school belonging.

CONCLUSION

The current study on bullying victimization and school belonging among adolescents found a negative correlation between these two factors. This indicates that

adolescents who experience bullying are more likely to feel disconnected from their school environment. Additionally, the research highlighted that loneliness, alcohol use, and smoking play a mediating role in the relationship between bullying victimization and school belonging. This suggests that the adverse effects of bullying on school belonging are partially explained by increased feelings of loneliness and engagement in substance use among victims. Given these results, it is essential for schools to implement comprehensive anti-bullying interventions that address not only the direct acts of bullying but also target underlying factors such as loneliness, alcohol use and smoking. Strategies aimed at enhancing school belonging among adolescents should concentrate on fostering a supportive and inclusive school climate where students feel connected, valued, and safe. Furthermore, interventions should include mental health support services to tackle the psychological distress experienced by victims of bullying, which can lead to feelings of loneliness and worsen the negative impact of bullying on school belonging. By addressing these multifaceted aspects of adolescent well-being, schools can establish a more positive and nurturing environment that fosters a sense of belonging and reduces the prevalence of bullying victimization among students.

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