

Introduction

Adolescence is a time of transformation, including changes to the body and hormones, the social environment, and the brain. Adolescence is a period of vulnerability to mental health issues for young people. Before the age of 24, many mental illnesses begin emerging including conditions such as depression, anxiety, eating disorders, substance use disorders, and psychosis (Blakemore, 2019). These disorders represent responses to internal and external stressors during adolescence, a time of physical and psychological changes in adolescents (Rasing et al., 2017). Further, the COVID-19 pandemic was a significant stressor that impacted the mental health of adolescents leading to the exacerbation of issues such as psychopathology (Rosen et al., 2021). Given the impact of the pandemic, longitudinal studies could be conducted that can monitor the pandemic's negative consequences on the mental health of adolescents (Hawke et al., 2021). Since it has been highlighted that the pandemic led to increased symptoms of mental health disorders (Office of the Surgeon General (OSG), 2021), it becomes crucial to acknowledge major depressive disorder is a significant public health issue in adolescence (Solmi et al., 2022). Depression leads to adverse long-term health outcomes for adolescents (Naicker et al., 2013). Additionally, those adolescents who experience depression are more likely to experience depression and anxiety disorders in later stages of life (Copeland et al., 2014; H. Green et al., 2005; Kessler et al., 2001; Zimmermann & Iwanski, 2014).

Adolescents with depression are more likely to suffer challenges at school and display greater school absenteeism (Ingul & Nordahl, 2013). There is a higher likelihood of dropping out of school later in adolescence due to self-reported depressive symptoms in the seventh grade (Quiroga et al., 2013). Social and academic issues could mediate the relationship between depression and low educational achievement (Wickersham et al., 2021). Social support from parents and schools can be beneficial and serve as protective factors for preventing adolescent depression (Hetrick et al., 2012; Miller et al., 2015). Age and gender significantly predict adolescent depression as girls scored lower on depression during childhood in comparison to boys, but starting at age 13, their depression score began to rise (Twenge & Nolen-Hoeksema, 2002). The same study reported no significant differences in depression between Black and White adolescents (Twenge & Nolen-Hoeksema, 2002). A study that assessed the impact of protective factors along with gender influence on adolescent depression reported risk factors led to a higher rate of adolescent depression in comparison to protective factors which predicted lower levels of depression (Breton et al., 2015).

School social work can provide a useful context for preventing the risk of depression by providing ways to enhance the emotional well-being of adolescents (Kelly et al., 2010). Globally, school social workers have been working to assess students' needs, providing interventions across ecological systems to mitigate students' learning hurdles, and promote positive socio-psychological outcomes (Huxtable, 2022). In a study conducted in 2018, it was found that providing adolescents with mental health treatments on the school campus resulted in positive outcomes for youth with a reduction in mental health problems (Swick & Powers, 2018). The results of a scoping review examining school social work services indicated that school social work interventions resulted in improving adolescents' social and mental health along with ensuring academic progress (Ding et al., 2023). Further, the findings of an intervention research study highlighted the provision of a mental health expert within the school campus who can evaluate and treat adolescents' mental and behavioral problems can help in mitigating mental health challenges and learning difficulties experienced by them (Mishna et al., 2012; Tornivouri et al., 2023).

Literature Review

Depression in adolescence is a public health concern and poses a significant risk for suicide, which is the leading cause of death in this age group (Centers for Disease Control and Prevention, 2023). Therefore, the identification and treatment of depression during adolescence is highly critical. Substantial research undertaken to address this issue determined psychological issues like depression and anxiety have an impact on students' academic ability (Williamson et al., 2005). Adolescents who experience suicidal thoughts, behaviors, and high levels of depression fare worse academically (Erbacher et al., 2014). Issues such as anxiety and depression are found to escalate during the examinations (Surtees et al., 2002). In this context, schools are an important factor influencing the mental health outcomes of adolescents (Griffin et al., 2022). In addition to schools, parental involvement in an adolescent's life has a critical influence on adolescents' mental health development and leads to lowered incidence of depression (Cong et al., 2020). Further, parental involvement has been found to predict positive outcomes for adolescents academically along with improving their emotional and mental functioning (Wang & Sheikh-Khalil, 2014). Therefore, parental support is a crucial influence in mitigating the risks of depression in adolescence (Rueger et al., 2022; Young et al., 2005).

School Engagement and Adolescent Depression

The results of a systematic review and meta-analysis showed school-based intervention programs aimed at preventing anxiety and depression among young people were able to substantially reduce the negative impact of these mental health issues (Werner-Seidler et al., 2017). Since school environments have a strong positive influence, interventions carried out at schools could serve as a protective factor to prevent depression in youth (Markowitz, 2017). Further, the results of a systematic review and meta-analysis showed school-based intervention programs could successfully lessen the burden of mental health conditions and lead to positive mental health outcomes for adolescents (Werner-Seidler et al., 2017). It is critical to understand the experience of major depressive disorders in adolescents also significantly predicts suicide-related behaviors (Hetrick et al., 2012). Moreover, for youth who are at risk of depression, school connectedness can be a beneficial source to lower the levels of depressive symptoms and suicidal thoughts and lead to improved levels of self-esteem (Foster et al., 2017). The results of a systematic review also showed that school connectedness led to a decline in anxiety and depression with an enhancement in self-esteem and peer relationships of adolescents at school (Raniti et al., 2022). Extensive studies have also shown teacher support leads to a decline in depression symptoms during adolescence (Arora et al., 2017; Cattley, 2004; Joyce & Early, 2014; Li et al., 2021).

According to Green et al. (2017), teachers were able to identify various emotional challenges experienced by their students and the findings of their study reveal the importance of involving teacher perspectives in school education. As teachers are uniquely positioned to interact with adolescents on a regular basis, they can play a crucial part in the identification of mental health challenges experienced by the adolescents and appropriate interventions can be carried out based on their identification (Aitken et al., 2017; Boman et al., 2016). In a longitudinal study, it was found that teacher support was associated with lesser depressive symptoms in adolescents (Delawalla, 2019). Given the importance of teachers in the school environment, the results of a systematic review highlighted both teacher support and school connectedness led to improved emotional health outcomes for adolescents (Kidger et al., 2012). Research also shows adolescents with mental, behavioral, or emotional disorders were able to receive mental health services in schools; it was also found Black adolescents were less likely than White adolescents to receive mental health services for treatment of their mental disorders (Costello et al., 2014). In this context, the overall school environment has a significant influence on prediction as well as the prevention of adolescent depression.

Parental Support, School Engagement, and Adolescent Depression

Adolescents who are neglected during childhood by their parents experience higher levels of suicidal ideation (Kwok & Gu, 2019). During adolescence, there is increased risk-taking due to the developmental processes and puberty that influence the self-regulation of adolescents' understanding and perception of risk (Steinberg, 2004). While harsh parenting practices lead to an increase in negative mental health outcomes and depression for adolescents (Gluschkoff et al., 2017; Schwartz et al., 2017), positive and supportive relationships with parents lead to a lowered risk of depression during adolescence (Mark et al., 2021).

Additionally, parental involvement in schooling has been cited by numerous studies as a key factor in promoting adolescent's positive development (Epstein, 2007; Hill & Taylor, 2004; Jeynes, 2007; Seginer, 2006). With regards to the gender difference in parental attachment and experience of depression, results of a study showed girls who were less close to their parents emotionally had a higher experience of depression in comparison to boys (Lewis et al., 2015). For instance, another study showed troubled relationships with parents led to an increased rate of depressive symptoms experienced by girls in comparison to boys (L. Wang et al., 2019). A meta-analysis conducted by Rueger et al. (2022) highlighted that perceived social support from both parents was significantly associated with adolescent depression and higher levels of depression during adolescence were associated with decreased levels of parental support. Some other studies have also shown that high levels of parental support were associated with lower levels of depressive symptoms during adolescence (Calandri et al., 2019; Schwartz et al., 2014; Schwartz et al., 2017).

Current Study

While there have been studies that have examined the role of parents and schools in adolescent depression as independent factors, there is a lack of literature examining both factors, the role of parents and schools together that are integral in the understanding of adolescent depression. Therefore, our study adds to the existing literature and builds on research evidence of factors that impact adolescents' mental health outcomes.

Methods

Data and Sample

The present study utilized the 2019 National Survey of Drug Use and Health (NSDUH), an annual, cross-sectional survey regarding substance use, mental health, and treatment and use of services across the United States from ages 12 and older (N = 56,136; SAMHSA, 2020). Both English and Spanish interviews were conducted with participants. Due to the present study's interest in examining adolescent mental health, the study was restricted to participants aged 12 to 17 who were in school at the time of interviews (unweighted N = 11,595). After listwise deletion to handle missing cases, the final unweighted sample size was 11,286.

Variables

Outcome variable

The outcome variable of interest was mental health, which was measured by the participants indicating if they had experienced a major depressive episode (MDE) in the last 12 months (0 = No; 1 = Yes).

Predictor Variables

The independent variable was school experience for students, which was measured by combining five variables with guidance from previous studies (King et al., 2019). Items were asked on a 4-point Likert scale from “always” (=3) to never (=0), with higher scores indicating more positive school experiences. Items included, “during the past 12 months, how often did you feel that the schoolwork you were assigned to do was meaningful and important” and “during the past 12 months, how often did your teachers at school let you know when you were doing a good job with your schoolwork?” Items were then summed ($\alpha = .79$).

The moderator for the current study was parental support, which was calculated by summing two items, consistent with previous research (Chen & Feeley, 2018): During the past 12 months, “how often did your parents tell you they were proud of you for something you had done” and “how often did your parents let you know when you’d done a good job” on a 4-point Likert scale (0= always to 3= never). We created the total score after reverse-recoding. Higher scores indicated higher levels of parent support (range 0 to 6; $\alpha = .88$).

Covariates - gender, race, age, income, and government assistance

Covariates included adolescent’s individual and family characteristics: age (in years), sex (0= male, 1=female), and race/ethnicity (Hispanic, non-Hispanic

White, non-Hispanic Black, non-Hispanic Other (including Native American/Pacific Islander, Asian, and those who identified as multiple races). Use of government assistance (0=no, 1=yes) and family income were also included and dummy coded (0=less than \$19,999, 1=\$20,000 to \$49,999, 2=\$50,000 to \$74,999, 3=\$75,000).

Analytic Plan

All analyses utilized weighted data for representation findings. SPSS 29 was used for all analyses, and the moderation analysis was conducted using PROCESS (Hayes, 2017). Our model tested whether, and to what extent, parent support moderated the relation between adolescent school experiences and experiencing a MDE in the last 12 months. The effects of sex, age, race, income, and government assistance were adjusted for in the model. All analyses utilized weighted data for representation findings. SPSS 29 was used for all analyses, and the moderation analysis was conducted using PROCESS (Hayes, 2017). Odds ratios were calculated by exponentiating the beta coefficient provided by PROCESS in SPSS.

Results

Sample Characteristics

Descriptive statistics for the study sample can be found in Table 1. Approximately half of the sample identified as male (49.8%), and the average age was 14.5 (SD = 1.68). The majority of participants identified as non-Hispanic White (51.8%), with 24.9% identifying as Hispanic and 12.9% identifying as Non-Hispanic Black. The majority of participants (46.6%) were in families with an annual income of \$75,000 or more. For the current sample, 16.1% of participants endorsed experiencing a MDE in the last 12 months.

Table 1. *Descriptive Statistics*

Variables	Weighted Mean (SD) or %
Male	49.8
Age	14.50 (1.68)
Race/Ethnicity	

Non-Hispanic Other	6.8
Non-Hispanic Black	12.9
Non-Hispanic Multiple Races	3.5
Non-Hispanic White	51.8
Hispanic	24.9
Government Assistance	21.6
Income	
No Income to \$19,999	12.9
\$20,000 to \$49,999	25.9
\$50,000 to \$74,999	14.7
\$75,000 or more	46.6
School Experience	9.67 (3.11)
Parent Support	4.73 (1.56)
MDE in last 12 months	16.1

Moderation Analysis

Table 2 presents the main effects and interaction effect for the logistic regression association between school engagement, parental support, and MDE in adolescents. Older adolescents had decreased odds of experiencing a MDE in the last year (OR = .88, $p < .001$), while the odds of experiencing a MDE in the last year were three times higher for females compared to their male counterparts (OR = 3.09, $p < .001$). Compared to their non-Hispanic White counterparts, participants who identified as non-Hispanic Black had significantly increased odds of experiencing a MDE in the last year (OR = 1.42, $p < .001$). When examining family income, adolescents in families with \$75,000 or higher

incomes, compared to those with none or up to \$19,999 in family income, had increased odds of experiencing a MDE in the last 12 months.

In examining the primary variables of interest for this study, we found adolescents who had more positive school experiences (OR = 1.06, $p = .008$) and increased levels of parental support (OR = 1.10, $p = .026$) were more likely to report a MDE in the last year. Additionally, there was a significant interaction found for the relationship between school experience and parental support and MDE (OR = 1.02, $p < .001$).

Table 2. *Logistics Regression Results*

	OR	95% Confidence Interval	
		Lower CLL	Upper CLL
Age	.88***	-.16	-.09
Sex: Female	3.09***	-1.24	-1.01
Race/Ethnicity ¹			
Non-Hispanic Black	1.42***	.16	.55
Non-Hispanic Other	1.07	-.16	.31
Hispanic	.97	-.17	.11
Family Income ²			
\$20,000 to \$49,999	1.15	-.05	.33
\$50,000 to \$74,999	.97	-.25	.19
\$75,000 and higher	1.27***	.04	.44
Government Assistance	.92	-.23	.07
School Experience	1.06**	.02	.10
Parent Support	1.10*	.01	.17
Interaction: School Experience x Parent Support	1.02***	.01	.03

Note: * $p \leq 0.05$, ** $p \leq .01$, *** $p \leq .001$. OR=Odds Ratio.

1. Reference group = Non-Hispanic White
2. Reference group = No income to \$19,999

Discussion

While the majority of research regarding depression during adolescence investigates symptoms, the current study focuses on the indication of having depression, which is important to note when we consider the likelihood of participants endorsing that they have specifically experienced an MDE. Given that adolescence is a stage of increased vulnerability to mental health conditions, this study examines how school and parent support together exert an influence on the experience of depression during adolescence. Findings from our study illustrate that both school experiences and parental support have a significant impact on adolescent depression. Further, parental support was found to significantly moderate the relationship between school experiences and the occurrence of adolescent depression. As depression in adolescence can lead to many damaging chronic health outcomes (Butterfield et al., 2021), it is imperative to understand the role of parenting support in reducing the symptoms of depression in adolescents. Additionally, the interventions made at school with emotional, social, and behavioral screening policies can identify students who are at risk of mental health conditions (Auerbach et al., 2020; Briesch et al., 2018). These findings highlight the need for schools to pay attention to adolescent mental health.

There is growing evidence that schools are an important place for fostering the well-being of adolescents (WHO and UNESCO, 2021). Our study showed school experience is a significant predictor of adolescent depression. As opposed to previous literature in this area, we found increased positive experiences in school are linked to a higher likelihood of reporting a depressive episode in the last year. On the contrary, prior research suggests engagement or positive experiences (i.e., connectedness) in school decreases levels of depressive symptoms. For example, the results of a systematic review suggested a significant association existed between school connectedness and adolescent mental well-being (Aldridge & McChesney, 2018). Further teacher support has been found to reduce symptoms of anxiety and depression in students and has been found to enhance positive psychological functioning in adolescence (Keane et al., 2023). During adolescence, a supportive relationship with teachers has been found to be

associated with decreased levels of anxiety, depression, and behavioral issues (Joyce & Early, 2014; Lei et al., 2016; Troop-Gordon & Kopp, 2011). Some studies have found teacher-student relationships also vary depending on the subject and the level of teacher-student interactions (Roorda & Koomen, 2021) which predicted their overall school engagement (Roorda & Bosman, 2022). The teacher-student relationship is significantly associated with adolescents' overall psycho-social well-being (Lei et al., 2016; Lester et al., 2013; Roorda & Koomen, 2021). Due to our contradictory findings with previous literature, we believe this could be connected to the dichotomous nature of our outcome. Rather than assessing levels of depressive symptoms, our study examined the endorsement of ever indicating a MDE in the last 12 months. This is important when considering comfort in sharing experiences of depression. Our study suggests students with more positive school experiences may feel more comfortable reporting mental health needs. Future studies could explore the aspects of the teacher-student relationships and overall engagement of adolescents in schools that help in reducing the negative psychological functioning of students along with the prevention of depression symptoms.

Similar to prior research, we found female students were more likely to experience MDE. Our study tried to explore the racial differences in depression rates and found Black adolescents experienced higher depression relatively to White adolescents which is also consistent with other studies (Bennett et al., 2005; Crockett et al., 2020; McGuinness et al., 2012; Morken et al., 2023). For instance, Hargrove et al. (2020) also reported that Black young adults experience higher depression rates in comparison to other race/ethnic groups. Similar to our study, the results of a cross-sectional study also found that multiracial adolescents experienced increased depression than non-multiracial adolescents (Lee & Jeong, 2021).

The findings of our study also differ from previous literature discussing family support, which suggests parental support can positively impact adolescent's school engagement along with improving their mental health outcomes (Wang & Sheikh-Khalil, 2014). The current study found participants with increased levels of parent support are more likely to report MDE. Similar to our school experience finding, the involvement of parents in an adolescent's life has a profound impact as is explained by other studies that reduced levels of parent and adolescent communication lead to increased depression among adolescents (Liu et al., 2021). Yet, parental involvement and its significant role in school engagement and the overall mental well-being of young people lack research (Thomas et al., 2020). In this context, it is important to acknowledge adolescents' perception of parenting behaviors as reported by the results of a

meta-analysis (Korelitz & Garber, 2016). The adolescents' perception of unfavorable parenting behaviors could impact their overall mental health outcomes and relationships with parents (Korelitz & Garber, 2016). Though we found this curious finding, it is important to note this finding can also be interpreted as increased reporting of MDE. With the dichotomized nature of our outcome variable, this finding could be attributed to discrepancies in self-reports of depression among adolescents (Caqueo-Urizar et al., 2022). Additional research is needed surrounding this topic. According to prior research findings, parental pressure on adolescents to achieve higher academic grades leads to a negative impact on adolescents' mental health (Quach et al., 2015; Strodl, 2015). For instance, the results of a meta-analysis showed that parents' harsh control and neglectful parenting were associated with a decline in adolescents' academic performance; on the other hand, parental warmth and greater involvement were associated with higher academic performance of adolescents (Pinquart, 2016). Other research has also shown a significant association between parental involvement and student behaviors and academic achievement at school (B. McNeal Jr, 2014). A systematic review examining the results of intervention studies involving parents in the prevention of depression in adolescents concluded parental involvement is a significant factor in the prevention of adolescent depression (Dardas et al., 2018). The results of the same systematic review (Dardas et al., 2018), align with the results of our study pointing to the need for the creation of interventions at the school level that can maximize positive mental health outcomes for adolescents along with parental involvement as a key component of the interventions aimed at elimination of adolescent depression.

Limitations

The current study is not without its limitations. First, NSDUH is a cross-sectional data set, so the current findings are limited in their interpretation due to the lack of causal inference. Longitudinal studies exploring school experiences and mental health are needed. Second, our ability to fully understand mental health is limited for this data set, with only being able to assess the experiences of an MDE. Symptoms are often measured very differently and on a scale, so additional research is needed to better understand mental health symptoms. Further, reports for this study were self-reports by adolescents. Previous research suggests reporting bias for reports of mental health needs (Wyrick & Bond, 2011), so reports of mental health could be lesser than actual needs.

Implications

The results of our study indicate schools and parents can together have a significant influence in mitigating and preventing the symptoms of depression in adolescents. Through our study, we have highlighted that parental support moderates the relationship between school engagement and the mental health of adolescents. The insights derived from our study are intended to acknowledge the need to foster mental health service utilization by students at schools, the importance of the role of teachers, and the overall school environment. Additionally, our study points to the need to foster parent-child relationships with enhanced parental involvement that can strengthen adolescents' positive mental health outcomes. It is crucial to also consider the perceived impact of parenting strategies on adolescents' mental health as is pointed out by earlier literature in this context (Korelitz & Garber, 2016; Pinquart, 2016). Parents need to be made aware that their children's mental and academic functioning could be impacted by their behaviors. Although the existing research shows parents have a significant influence on adolescent's mental health and academic outcomes (Wang & Sheikh-Khalil, 2014), our research extends this line of work and shows the crucial role of parental support in moderating the relationship between school engagement and adolescent's mental health outcomes. The findings of our study also highlight that schools and parents can together contribute to reinforcing adolescents' mental well-being.

It is also crucial to highlight the role of school social workers to engage students effectively in the learning environment as well as help students with emotional, behavioral, and mental challenges. Prior studies confirm that services and interventions provided by school social work practice can have significant implications for the promotion of student's well-being along with parental involvement (Ding et al., 2023). School social work interventions can be utilized to enhance the academic success of students along with the identification of students' challenging classroom behaviors (Ervin et al., 2018). Some school social work interventions have been able to successfully demonstrate the prevention and treatment of depression experienced by students (Allen-Meares et al., 2013). As reported by another study, the role of teachers is imperative for the creation of a positive learning environment and fostering the psycho-emotional well-being of all students (Sadzaglishvili & Akobia, 2020). Further, a study by Fein et al. (2021) presented the need for the creation of a trauma-informed curriculum in schools for the benefit of those students belonging to racially minoritized groups. The results of another study also posited that carrying out specific interventions in schools such as a resilience curriculum created for students belonging to racial minorities can lead to significant improvements in students' mental health outcomes (Ijadi-Maghsoodi et al., 2017). The findings reported from these studies are similar to our current study findings that reveal

Black adolescents experience increased depression in comparison to other racial groups, therefore school-level interventions could result in significant improvements in their mental health. In this context, interventions carried out in schools could also destigmatize challenges related to mental health for specific population groups and their mental health service utilization in schools.

Conclusion

Our study points to the need to prioritize the mental well-being and prevention of depression in adolescents. The findings of our study indicate a significant association between school experience and adolescent depression reporting, wherein parental support significantly moderates the association between school experience and adolescent depression reporting. Therefore, school interventions at all levels (such as whole-school approaches, targeted efforts, and intensive interventions, such as counseling for specific racial groups of students) and increased promotion of parental support and involvement can be useful measures to target the prevention of adolescent depression and encourage adolescents to report their mental health needs.

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