



Original article

Risk Factors for Substance Misuse and Adolescents' Symptoms of Depression



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ABSTRACT

Purpose: Depressive symptoms during adolescence are positively associated with peer-related beliefs, perceptions, and experiences that are known risk factors for substance misuse. These same risk factors are targeted by many universal substance misuse prevention programs. This study examined whether a multicomponent universal substance misuse intervention for middle schoolers reduced the associations between depressive symptoms, these risk factors, and substance misuse.

Methods: The study used data from a place-randomized trial of the Promoting School-Community-University Partnerships to Enhance Resilience model for delivery of evidence-based substance misuse programs for middle schoolers. Three-level within-person regression models were applied to four waves of survey, and social network data from 636 adolescents followed from sixth through ninth grades.

Results: When adolescents in control school districts had more symptoms of depression, they believed more strongly that substance use had social benefits, perceived higher levels of substance misuse among their peers and friends, and had more friends who misused substances, although they were not more likely to use substances themselves. Many of the positive associations of depressive symptoms with peer-related risk factors were significantly weaker or not present among adolescents in intervention school districts.

Conclusions: The Promoting School-Community-University Partnerships to Enhance Resilience interventions reduced the positive associations of adolescent symptoms of depression with peer-related risk factors for substance misuse.

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IMPLICATIONS AND CONTRIBUTION

When adolescents have more symptoms of depression, they perceive that substance misuse is more common and has more social benefits, and they have more substance-misusing friends. A proven multicomponent universal substance misuse intervention reduced the associations of depressive symptoms with many peer-related risk factors for substance use.

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By the end of adolescence, 10%–20% of youth will experience a major depressive episode, and up to 25% will experience subthreshold symptoms of depression [1,2]. Youth depression is positively associated with substance misuse [3–5] or the use of drugs and alcohol in ways that are illegal or not medically prescribed. The co-occurrence of depression and substance misuse is associated with greater severity and duration of both problems [3,6]. It thus is important to understand sources of this co-occurrence that may be modifiable through intervention.

Theoretically, adolescents with depression engage in more substance misuse partly because they experience more peer problems [7] and believe that substance misuse has social benefits [8]. Indeed, compared with adolescents with fewer symptoms of depression, adolescents with more symptoms are more likely to believe that smoking cigarettes and drinking alcohol are common among their peers [9,10]. They also perceive that more of their friends smoke [11] and approve of smoking [12]. In addition, adolescents with more internalizing symptoms have more friends who smoke, drink, and use marijuana [8]. Adolescents with depression thus appear more likely to overestimate the social importance of substance misuse and to experience peer contexts that may encourage use.

These same peer-related risk factors for substance misuse are targeted by many universal substance misuse prevention programs. One added benefit of such programs thus may be a reduction in important risk factors, and ultimately a reduction in substance misuse, among a set of adolescents who are especially likely to experience harmful outcomes. Such programs can have benefits beyond their targeted outcomes, including “crossover” effects on adolescent depression [13,14], particularly when they target social skills affecting peer relationships or peer influence [15,16]. Yet it is unclear whether risk factors like attitudes, beliefs, and peer affiliations are as malleable—or perhaps more malleable—among adolescents with depression as they are among nondepressed adolescents. If adolescents with depression are especially likely to misperceive social cues and norms about substance misuse, then programs targeting those misperceptions could be especially beneficial for those adolescents. Alternatively, symptoms of depression, such as hopelessness or concentration difficulties, could hinder uptake of prevention program content, reducing program effects among adolescents with depression [10].

Findings from two school-based randomized trials of smoking prevention programs suggest that universal interventions might reduce harmful outcomes among adolescents experiencing depression. A study of California youth found greater program effects on trying smoking among highly depressed middle schoolers, but only in predominantly Hispanic/Latino schools (vs. racially/ethnically heterogeneous schools) [17]. Those analyses were adjusted for best friends’ smoking and for perceived smoking norms, making it unclear whether the program affected those proximal outcomes. A study of seventh graders in China found program effects on recent smoking [18] and on affiliation with smoking friends [19] only among boys who were both highly depressed and already smokers. That study used a self-report measure of friends’ smoking, so the authors could not determine whether the program changed perceptions, actual friend affiliations, or both [19].

We use within-person analyses and data from a school district-randomized trial of a multicomponent universal substance misuse intervention for middle schoolers to examine whether the intervention moderated any associations between depressive symptoms and substance misuse expectancies, perceived peer substance misuse, exposure to substance-misusing peers, and substance misuse itself. We examine cigarette-, alcohol-, and marijuana-related outcomes separately, allowing us to compare our findings with past studies of depression and smoking prevention programs. We hypothesized that depressive symptoms would be positively associated with our outcomes and that these associations would be weaker in intervention school districts.

Methods

Participants

Our data are from Promoting School-Community-University Partnerships to Enhance Resilience (PROSPER), a place-randomized substance abuse prevention trial in 28 public school districts in rural Pennsylvania and Iowa [20–24]. Fourteen districts within each state were paired on geographic area and size. One district from each pair was randomly assigned to receive the intervention. Control districts received no PROSPER-supported programming. The trial and analyses were approved by the Iowa State University and Pennsylvania State University Institutional Review Boards; data analysis was also approved by Florida State University’s Human Subjects Committee. One intervention district did not provide social network information; we excluded that district and its paired control from this study.

The full PROSPER youth sample was comprised of all adolescents from two successive sixth-grade cohorts ($N \sim 11,000$) who provided assent and whose parents or guardians did not return a form excluding them from the study. Adolescents completed in-school surveys in the fall of 6th grade and again each spring through 12th grade. The in-school surveys also collected social network information. A random sample of 2,267 families from cohort 2 (adolescents in sixth grade in 2003) was recruited for an in-home portion of the study conducted concurrently with the in-school surveys from sixth through ninth grades. Of these families, 977 (43%) provided active written consent and completed in-home surveys. The in-home surveys covered more topics than the in-school surveys, which were kept shorter to reduce administration time. Prior analyses revealed that these in-home participants resembled the larger sample on demographic characteristics and substance use but were slightly less delinquent and perceived fewer benefits of use, indicating that they were at slightly lower risk for problem behavior [25,26].

This study used the in-home, in-school, and social network data. We began with the 932 adolescents (547 intervention, 385 control) who were from the 26 included school districts and provided in-home data in fall of sixth grade (the pretest). We excluded 19 adolescents (7 intervention, 12 control) who did not complete in-school pretest surveys, and 204 (115 intervention, 89 control) who did not provide social network information at the pretest. Of the remaining 709 adolescents, 636 (387 intervention, 249 control) provided in-home, in-school, and social network information at one or more follow-up waves from sixth through ninth grades (74% completed at least three of the four follow-ups). These 636 adolescents, together providing 2,624 observations across waves, were our analytical sample.

At pretest, compared with the full PROSPER sample, adolescents in our analytical sample had less positive social expectancies for substance misuse, were more likely to be white, and were less likely to have smoked or drunk in the past month, but were equivalent on the other study variables. Additional checks for pretest differences revealed that adolescents in included (vs. excluded) school districts perceived lower cigarette and marijuana use norms and were less likely to be from two-parent families; adolescents with (vs. without) social network information had more positive alcohol expectancies and were more likely to receive free or reduced-cost school lunch; and adolescents who did (vs. did not) complete any follow-up surveys were less likely to receive free lunch and had less positive alcohol and

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