The co-occurrence of substance use and bullying behaviors among U.S. adolescents: Understanding demographic characteristics and social influences

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ABSTRACT

This study examined the co-occurrence of subtypes of substance use and bullying behaviors using latent class analysis and evaluated latent class differences in demographic characteristics, peer and parental influences. Self-reported questionnaire data were collected from a nationally representative sample ($N = 7508$) of 6–10th grade adolescents in the United States. Four latent classes were identified: the non-involved (57.7%), substance users (19.4%), bullies (17.5%), and substance-using bullies (5.4%). Older and Hispanic adolescents were more likely to be substance users and substance-using bullies, whereas younger and African American adolescents were more likely to be bullies. Females were more likely to be substance users, whereas males were more likely to be bullies and substance-using bullies. Spending more evenings with peers posed greater risks for substance use, bullying, and the co-occurrence of both problem behaviors. Paternal knowledge exerted protective effects over-and-above the effects of maternal knowledge. Implications for prevention and intervention efforts are discussed.

Substance use and bullying are two problem behaviors that are prevalent in adolescence, and both of them are correlated with a broad array of adverse developmental outcomes (Feder, 2007; Nansel et al., 2001; Young et al., 2002). Prior research suggested that both adolescent substance use and bullying are associated with delinquency (Barker, Arseneault, Brendgen, Fontaine, & Maughan, 2008; D'Amico, Edelen, Miles, & Morral, 2008), low academic attainment (Beran, Hughes, & Lupart, 2008; King, Meehan, Trim, & Chassin, 2006), school dropout (Townsend, Flisher, Chikobvu, Lombard, & King, 2008; Townsend, Flisher, & King, 2007), and mental health problems, such as depressive and psychosomatic symptoms (Chan, Dennis, & Funk, 2008; Copeland, Shanahan, Costello, & Angold, 2009; Gini & Pozzoli, 2009; Seals & Young, 2003). Yet, although both adolescent substance use and bullying share similar negative correlates and are widely recognized as critical public health problems, limited research has focused on modeling the co-occurrence of substance use and bullying behaviors in population-based samples. As a result, it remains unclear to what extent substance use and bullying behaviors co-occur on

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a population level, and whether its prevalence might justify the development of prevention programs that simultaneously address both problem behaviors. Moreover, there is little empirical data that indicate who are at the greatest risks for co-occurring substance use and bullying, and what contextual factors might underlie the co-occurrence of these two problem behaviors. The current study is designed to address these gaps in existing literature, which may in turn provide population level data to guide prevention efforts.

Co-occurrence of substance use and bullying behaviors

The Problem Behavior Theory (Jessor & Jessor, 1977) suggests that problem behaviors tend to correlate and co-occur among adolescents. A number of empirical studies have shown a positive correlation between substance use and bullying in adolescence (Bassarath, 2001; Luukkonen, Riala, Hakko, Räsänen, & Study-70 workgroup, 2010; Schnohr & Niclasen, 2006). For example, Carlyle and Steinman (2007) found that greater substance use was significantly associated with higher bullying aggression among a large sample of sixth to twelfth graders in metropolitan Ohio. Recent longitudinal studies have further shown that childhood bullying behaviors prospectively predicted substance use in late adolescence and emerging adulthood (Kim, Catalano, Haggerty, & Abbott, 2011; Niemelä et al., 2011). However, these studies examined substance use and bullying in general and did not distinguish between different subtypes of substance use and bullying behaviors. Given previous studies showing different prevalence rates and correlates of subtypes of substance use and bullying (Kokkevi, Richardson, Florescu, Kuzman, & Stergar, 2007; Wang, Iannotti, & Nansel, 2009), it is of interest to test the degree to which different subtypes of bullying and substance use behaviors co-occur among adolescents.

Prior research has attempted to examine and model the co-occurrence of adolescent problem behaviors, which often included substance use behaviors, sexual activity, and other externalizing behaviors such as aggression and delinquency (Racz, McMahon, & Luthar, 2011; Willoughby, Chalmers, & Busseri, 2004). For example, using a large sample of 739 15-year-old boys and girls in New Zealand, Fergusson, Horwood, and Lynskey (1994) applied a latent class analysis (LCA) model to examine the co-occurrence of alcohol abuse, cannabis use, sexual activity, conduct disorder and police contact among adolescents. A four-class model was found to best describe patterns of adolescents' engagement in these problem behaviors, including a class of well adjusted, a class with more early sexual activity and substance use, a class with more antisocial and lawbreaking activities, and a class with all problem behaviors. Gender differences were also observed in which females were more likely to be in the class with substance use, whereas males were more likely to be in the class with antisocial and lawbreaking activities.

In a more recent study, Weden and Zabin (2005) examined six adolescent problem behaviors using a LCA model, which included alcohol use, smoking, marijuana use, fighting, truancy, and early sexual initiation. Their results similarly indicated the existence of a subgroup with multiple problem behaviors and adolescents in this group were more likely to be European American and young male adolescents. Although previous research has pointed to the existence of a group of adolescents who engage in multiple problem behaviors, little is known if this pattern can be generalized to subtypes of bullying such as physical, verbal, and relational bullying, as well as cyber bullying, a new form of bullying which can be defined as "a form of aggression that occurs through personal computers (e.g., e-mail and instant messaging) or cell phones (e.g., text messaging)" (Wang, Iannotti, & Luk, 2012; Wang, Iannotti, et al., 2009, p. 369). Moreover, the demographic characteristics of individuals with different levels of involvement in problem behaviors have not been well established in previous research, given the use of different samples that are not nationally representative. Thus, it is of interest to obtain an estimate of the national prevalence of co-occurring substance use and bullying, and the associated demographic characteristics of each latent class in a nationally-representative U.S. sample of adolescents.

Gender, age, and racial/ethnic differences in substance use and bullying behaviors

Early studies have typically reported that males were more likely to use substances than females (Chassin, Ritter, Trim, & King, 2003; Young et al., 2002), but recent evidence suggests that this gender gap is narrowing in younger cohorts (Pritchard & Cox, 2007), especially for smoking and drinking in the U.S. and other countries (Hammond, 2009; Keyes, Grant, & Hasin, 2008). As for bullying, research suggests that male adolescents are more likely to bully others physically, whereas female adolescents are more likely to bully others socially (Bjorkqvist, 1994; Owens, Shute, & Slee, 2000; Wang, Iannotti, et al., 2009). Emerging evidence also suggests that males are more likely than females to engage in cyber bullying, a new form of bullying (Kiriakidis & Kavoura, 2010; Wang, Iannotti, et al., 2009).

Substance use increases during adolescence and remains a significant threat to the wellbeing of adolescents (Chassin et al., 2003; Young et al., 2002). According to the 2009 *Monitoring the Future survey*, cigarette smoking, alcohol drinking, and marijuana use in the past 30 days almost doubled from grade 8 to 10 (Johnston, O'Malley, Bachman, & Schulenberg, 2010). In grade 8, the prevalence rates of cigarette smoking, alcohol drinking and marijuana use were 6.5%, 14.9% and 6.5% respectively. By grade 10, these prevalence rates correspondingly increased to 13.1%, 30.4% and 15.9%. In addition, the prevalence of drunkenness in the past 30 days almost tripled during this period from 5.4% in grade 8–15.5% in grade 10. In contrast, bullying behaviors decrease with age during middle and high school (Carlyle & Steinman, 2007). In a U.S. national sample, prevalence rates of weekly bullying behaviors in sixth, eighth and tenth grade adolescents were 10.4%, 9.8% and 6.9% respectively (Nansel et al., 2001). Because of these differential age trends, it is of interest to examine whether there are age-specific trends for co-occurring substance use and bullying behaviors.