



Prevalence rates of drug use among school bullies and victims: A systematic review and meta-analysis of cross-sectional studies



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ABSTRACT

Bullying is a common aggressive behaviour in school, with a number of cross-sectional studies showing that it exhibits a high comorbidity with other problem behaviours. The present study aims to estimate the comorbidity of school bullying (perpetration and victimisation) with drug use by incorporating and meta-analysing all available evidence on the cross-sectional association between the two variables. Meta-analytic results are based on a comprehensive systematic review across 20 databases and 46 journals. A total of 61 relevant manuscripts were included in the systematic review. Following explicit methodological criteria for the inclusion/exclusion of reports, 13 of them were eligible for the meta-analysis. The association of school bullying perpetration with drug use (adjusted odds ratio $OR = 2.82$; 95% CI 1.97–4.02; $z = 5.71$; $p < .001$) suggests a very strong relationship. For example, if a quarter of children were bullies and a quarter were drug users, this value of the OR would correspond to 40.88% of bullies being also drug users, compared with 19.71% of non-bullies. The association of school bullying victimisation with drug use (adjusted odds ratio $OR = 1.79$; 95% CI 1.38–2.32; $z = 4.41$; $p < .001$) suggests a moderate relationship. For example, if a quarter of children were victims and a quarter were drug users, this value of the OR would correspond to 33.69% of bullied youth also being drug users, compared with 22.1% of non-bullied youth. Adjusted effect sizes are based on study findings that used statistical controls for confounding variables, thus providing the unique association of school bullying with drug use over and above other important risk factors that may explain this association. Implications for policy and intervention research arising from this review are highlighted.

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1. Introduction

Bullying is one of the most prevalent forms of aggression in school (Nansel et al., 2001). It includes a range of direct (e.g., physical damage, injurious words, threats) and indirect behaviours (e.g., rumours or rejection of victims) characterised by being intentional, repeated over time and performed in a context of power imbalance (CDC, 2014). Although the prevalence varies among countries and cultures, a general trend seems to indicate that between 20% and 30% of schoolchildren are involved in school bullying (Craig et al., 2009; Juvonen, Graham, & Schuster, 2003).

Bullying has been the focus of intervention efforts not only because of the problematic nature of the behaviour per se, but also because of its adverse effects on children's physical and psychosocial health (Fekkes, Pijpers, Fredriks, Vogels, & Verloove-Vanhorick, 2006; Gini & Pozzoli, 2009). Notably, longitudinal studies and meta-analyses suggest that bullies are more likely to develop symptoms of depression (e.g., Ttofi, Farrington, Lösel, & Loeber, 2011a) and to be involved in delinquency (e.g., Ttofi, Farrington, Lösel, & Loeber, 2011b) as well as in violence (e.g., Ttofi, Farrington, & Lösel, 2012).

Furthermore, the cross-sectional evidence suggests that bullying can be correlated and co-occur along with other hazardous behaviours which can seriously interfere with the psychosocial development of children (Farrington, 1993, 2005; Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998). This includes, for instance, low self-esteem, depression, anxiety, delinquency, weapon carrying and drug use (Bradshaw, Waasdorp, Goldweber, & Johnson, 2013; Pranjic & Bajraktarevic, 2010; Ttofi & Farrington, 2008).

This paper examines the link between school bullying and drug use. Both are prevalent problem behaviours during the school years and both of them are correlated with a broad array of negative developmental outcomes (Luk, Wang, & Simons-Morton, 2012), highlighting the need for intervening early and addressing both of these risk factors which may function as a stepping stone towards other problem behaviours in adult life (Ttofi et al., 2012). Both factors, for instance, impact negatively the academic development (Beran, Hughes, & Lupart, 2008; Schwartz, 2000) and general mental health (Birkett, Espelage, & Koenig, 2009; Fleming & Jacobsen, 2009b; Roland, 2002; Waters, Wake, Toumbourou, Wright, & Salmon, 1999; Wei, Williams, Chen, & Chang, 2010) of children.

Despite a growing body of cross-sectional research on the link between drug use and bullying behaviour during school years (Brown, Riley, Butchart, & Kann, 2008; Moon & Alarid, 2014; Niemelä et al., 2011), no previous meta-analysis has been conducted to systematically synthesize relevant evidence and to identify the magnitude and the direction of this association. The current paper addresses this gap by meta-analysing results from existing published and unpublished studies following a comprehensive systematic review. This meta-analytic investigation has obvious implications for intervention research. To the extent that a significant association between school bullying and drug use can be established, then it may be inferred that effective bullying prevention programmes could be viewed as an effective intervention strategy for the reduction of school bullying and other co-occurring problem behaviours, including drug use.

1.1. Bullying and drug use: theoretical perspectives

It is difficult to determine the exact prevalence of bullying involvement and drug use as a comorbid phenomenon, due to varying sampling and other methodological features across available studies. Luk et al. (2012) found that 5.4% of adolescents [$M_{age} = 14.2$; $SD = 1.42$] displayed a co-morbid condition, while Radliff, Wheaton, Robinson, and Morris (2012) found co-morbidity for 4.9% of high school students and for 1.6% of middle schoolchildren. In a sample of adolescents [$M_{age} = 15.3$; $SD = 1.58$], Garcia Continente, Pérez Giménez, and

Nebot Adell (2010) found that 7% of boys and 9.6% of girls displayed a co-morbid condition.

Prevalence rates of drug use also vary between school students who are involved in different bullying roles as perpetrators, victims or bully-victims. Evidence suggests that perpetrators are overrepresented in drug consumption categories compared with non-bullies (Kaltiala-Heino, Rimpelä, Rantanen, & Rimpelä, 2000). Victims are also more likely to use drugs compared to non-involved individuals; however, prevalence rates are higher for perpetrators than victims of school bullying. For instance, Radliff et al. (2012) concluded that 11.4% of bullies reported marijuana use, compared with only 2% of victims and 1% of non-involved children. Comparable evidence is available from another American survey (Bradshaw et al., 2013), asserting that bullies are two times more likely to use drugs ($OR = 2.77$; 95% CI 2.4–3.2; $p < .001$) compared with non-involved students, while the association for victims is much weaker ($OR = 1.30$; 95% CI 1.1–1.5 $p < .001$).

A more restricted body of research has collected information for a special group of victims who also display aggressive behaviours, known as bully-victims. The link between drug use and aggressive victims is less conclusive in the literature. While Kaltiala-Heino et al. (2000) and Bradshaw et al. (2013) suggest a high association between those acting as bully-victims and drug use (with $OR = 7.1$; 95% CI 4.1–12.2 and $OR = 3.4$; 95% CI 3.1–4.4; $p < .001$ accordingly), the conclusion of Niemelä et al. (2011) does not support such findings ($OR = 0.3$; 95% CI .04–2.6; $p < .05$).

The literature offers various theoretical explanations for the link between school bullying and drug use. A notable body of research argues that drug use may function as a coping mechanism against the experience of stressful life events, including school bullying and peer victimisation. Coping theory proposes that adolescents engage in high risk behaviours in response to increased negative affects resulting from exposure to victimisation (Lazarus, 1993). Since bullying is characterised by repeated aggressive acts over time against less powerful (physically or emotionally) individuals, it is plausible that victims of school bullying may engage in substance use as a (maladaptive) way of coping with their negative school experiences.

A similar theoretical framework is that of Agnew's (1992) general strain theory of crime and deviance, which has been used in school bullying research to explain the higher prevalence of self-harm exhibited by victims as compared to non-victimised students (Hay & Meldrum, 2010). Both coping theory and general strain theory could explain the higher prevalence of substance use among school bullies. Specifically, a recent systematic review and meta-analysis of 153 studies (Cook, Williams, Guerra, Kim, & Sadek, 2010:75) concluded that bullies tend to present negative self-related cognitions, come from a conflictive family environment characterised by poor parental monitoring, and are more likely to perceive the school as having a negative atmosphere. In that context, it may be argued that the 'typical bully' is more likely to be involved in drug use as a way to cope with stressful life experiences within the family and school.

Another theoretical model suggests that substance use functions as a trigger for subsequent aggression and violence due to physiological changes (Yudko, Blanchard, Henrie, & Blanchard, 1997) or due to the involvement of drug users with deviant/delinquent groups (Bui, Ellickson, & Bell, 2000). In particular, Goldstein (1985) argued in favour of a causal link of drug use on crime based on three mechanisms: (1) drug users become more irrational which can trigger off violent behaviours (psychopharmacological explanation), (2) drug users can be compelled to commit crime in order to finance their consumption (economic explanation), and (3) violent behaviours in drug users are the result of their participation in the illegal drug market (systemic explanation). While any argument about a causal link between bullying and drug use can only be supported by better quality methodological criteria such as by evidence from within-individual analyses and longitudinal research (Murray, Farrington, & Eisner, 2009), the focus of the current paper is

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