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Do Adolescent Delinquency and Problem Drinking Share Psychosocial Risk Factors?

A Literature Review

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Abstract

Despite the prevalence and damaging effects of adolescent problem drinking, relative to delinquency, far less research has focused on drinking using an integrated theoretical approach. The aim of the current research was to review existing literature on psychosocial risk factors for delinquency and problem drinking, and explore whether integrating elements of social learning theory with an established psychosocial control theory of delinquency could also explain adolescent problem drinking. We reviewed 68 studies published post-1990 with particular focus on articles that empirically researched risk factors for adolescent problem drinking and delinquency in separate and concurrent studies and meta-analytic reviews. We found shared risk factors for adolescent delinquency and problem drinking that are encompassed by an extension of psychosocial control theory. The potential of an extended psychosocial control theory providing a parsimonious theoretical approach to explaining delinquency, problem drinking and other adolescent problem behaviours, along with suggestions for future investigations, are discussed.

Keywords: adolescence, problem drinking, delinquency, etiology, risk factors, critical review

Do Adolescent Delinquency and Problem Drinking Share Psychosocial Risk Factors?

A Literature Review

Despite the prevalence and damaging effects of adolescent problem drinking, relative to delinquency, it has received far less attention using an integrated theoretical approach (Ennett et al., 2008; Petraitis, Flay, & Miller, 1995). One of the more dominant approaches to explaining adolescent problem behaviour, Aker's (1977) social learning theory, suggests that problem drinking, like other deviant behaviours, is shaped by social processes. Yet, few attempts have been made to understand the psychological aspects that may contribute to this phenomenon (Baker, 2010; Costello, Anderson, & Stein, 2006; Ennett et al., 2008). This has been a substantial omission within the literature, particularly as there are well-established psychosocial theories of delinquent behaviour with considerable explanatory value (Lanier & Henry, 1998). Given that delinquency and problem drinking are two prevalent types of adolescent problem behaviour, they are likely to share classes of etiological causes (Jessor & Jessor, 1977), warranting further research in this area.

Unfortunately, research that has investigated adolescent problem drinking and delinquency has generally examined these variables separately (e.g., Buist, 2010; Crosnoe, 2006; Montgomery, Thompson, & Barczyk, 2011). Of those that have analysed these behaviours concurrently, relatively few researchers have attempted to classify the underlying psychosocial risk factors common to both (e.g., Kenny & Schreiner, 2009; Putniņš, 2006). Meta-analytical studies that have comprehensively reviewed and organised psychosocial risk factors for adolescent delinquency and problem drinking have been limited. As demonstrated by the following literature review, meta-analytical articles summarising psychosocial causes were only found for delinquency and were few in number (Cottle, Lee, & Heilbrun, 2001; Leschied, Chiodo, Nowicki, & Rodger, 2008). From this perspective, the scope of the current literature review builds upon previous literature in an attempt to gain a theoretical

understanding of adolescent delinquency and problem drinking.

In meta-analytical studies of delinquency, recurrent risk factors for delinquency were identified as regulatory agents, that is, elements of social or psychological control (Cottle et al., 2001; Leschied et al., 2008). An integrated theoretical framework that encompasses sociological and psychological control factors of delinquency is Mak's (1990) psychosocial control theory. Its synthesis with earlier social models of problem behaviours, such as social learning theory (Akers, 1977), may provide a comprehensive theoretical account of adolescent delinquency and problem drinking. If collective psychosocial control factors for both behaviours are identified, an extended version of psychosocial control theory may provide a parsimonious framework to organise adolescent delinquency and problem drinking, and may also facilitate understanding of problem behaviours, and assist detection and early intervention efforts.

A Common Theoretical Framework of Adolescent Delinquency and Problem Drinking?

Problem behaviour theory (Jessor & Jessor, 1977), an overarching theory of deviance, encompasses a social-psychological framework of common causes to account for adolescent involvement in a range of multiple problematic behaviours. Variables derived from individual, social, and environmental systems are thought to serve as instigations for involvement in unconventional problematic behaviours. Finding collective risk factors for two types of problem behaviours across these dimensions would provide support for the assumption of common causes within problem behaviour theory.

Social learning theory (Akers, 1977), a dominant sociological perspective of deviant behaviour, argues that unconventional actions are the result of group influence, observation, and modelling of salient role models (Ennett et al., 2008; Vold, Bernard, & Snipes, 2002). Research has shown that adolescents who are exposed to delinquent or alcohol-using peers or parents are more likely to engage in these behaviours (Haynie, 2002; May & Jarjoura,

2006), thus providing some empirical validation (Akers, 2009). Social learning theory provides a valuable explanation of adolescent peer influence, a variable overlooked in Mak's (1990) psychosocial control theory. Peer influence may be a particularly important variable for adolescent drinking styles, which have been shown to include heavy alcohol consumption in predominantly social situations (Coker & Borders, 2001). From this perspective, the integration of elements of social learning theory with Mak's (1990) psychosocial control theory is likely to provide a more inclusive account of adolescent involvement in delinquent and problem drinking behaviours. However, social learning theory does not account for the psychological aspects involved in problem behaviours, unlike Mak's (1990) psychosocial control theory, which considers both sociological and psychological risk factors.

Psychosocial control theory of delinquency. Building on Hirschi's (1969) social control theory, and consistent with Jessor and Jessor's (1977) assumption that risk factors emerge from multiple domains, Mak (1990) developed psychosocial control theory, an integrated approach to explaining adolescent delinquency.

Family factors. Mak (1990) argued that adolescents with strong attachments to family are less likely to engage in delinquent activity due to fear of disrupting this relationship. This is consistent with research which has found that adolescents with weakened attachments to family were more likely to engage in delinquent behaviours (Cottle et al., 2001; Leschield et al., 2008; Hoeve, Dubas, Gerris, van der Laan, & Smeenk, 2011).

School factors. Those who are attached to school, or have educational or occupational aspirations, avoid delinquent behaviour as it may jeopardise future career options (Mak, 1990). This is consistent with research finding that poor school attitudes or school exclusion is related to higher levels of delinquency (Li et al., 2011; McCrystal, Higgins, & Percy, 2006).

Individual factors. Parallel to Jessor and Jessor's (1977) assumption that risk factors

for adolescent problem behaviour emerge from various domains, Mak (1990) expanded on Hirschi's (1969) original theory and introduced psychological control variables of impulsiveness and emotional empathy. Mak (1990) argued that those who have heightened levels of impulsivity and lower levels of emotional empathy are more likely to engage in delinquent behaviours due to the inability to foresee the consequences of their actions and failure to fully appreciate the disapproval of others, respectively.

In addition to delinquency, research has indicated that impulsivity is often associated with problem drinking (Cooper, Wood, Orcutt, & Albino, 2003; Curcio & George, 2001). Sensation seeking, a facet of impulsivity, has also been linked with drinking behaviours (Hittner & Swicket, 2006; Park, Sher, Wood, & Krull, 2009), although differs to impulsivity in that it is particularly linked with binge drinking (Castellanos-Ryan & Conrod, 2011; Curcio & George, 2011). Impulsivity and sensation seeking are seldom investigated separately (yet concurrently) due to conceptual overlaps (Steinberg et al., 2008). Given that empirical evidence suggests impulsivity and sensation seeking are associated with differing outcomes, it may be valuable to include both traits in a revised version of psychosocial control theory.

Neighbourhood factors. Prosocial neighbourhood values, commitment to conventional lines of action, and community involvement was also found to be a deterrent from delinquent activity (Mak, 1990). Mak (1990) also found that those who did not believe in the moral validity of the law were more likely to engage in delinquency, as they did not respect societal laws and therefore did not feel obliged to obey them. Hirschi (1969) and, more recently, Mak (1990) found that family, school, individual, and neighbourhood attachments act as social and psychological regulatory agents, encouraging compliance with societal norms. When these attachments are disrupted or weakened, it can interfere with the adolescents' ability or willingness to comply with conventional lines of action, and may

result in problematic behaviour.

Limitations of psychosocial control theory. Even with consideration of sociological and psychological aspects of delinquency, Mak's (1990) psychosocial control theory has some limitations. First, psychosocial control theory fails to consider peer influence. Given that peers have been found to be more influential than parents for adolescents (Crawford & Novak, 2002), integrating elements of social learning theory with psychosocial control theory may strengthen explanatory value. Second, impulsivity in this model has not been differentiated from sensation seeking. Despite being a facet of impulsivity, sensation seeking has considerable differences. For example, impulsivity refers to the inability to plan ahead and consider the consequences of one's actions (Whiteside & Lynam, 2009), whereas sensation seeking refers to those who seek out various, novel and thrilling forms of stimulation (Whiteside & Lynam, 2009; Zuckerman & Kulhman, 2000). Unfortunately, separate measurement of impulsivity and sensation seeking, which are arguably distinct constructs, is rarely undertaken due to conceptual overlaps (Steinberg et al., 2008). In this regard, two separate, conceptually focused measures of impulsivity and sensation seeking are required to target only the core aspects of each construct. In spite of these limitations, psychosocial control theory may provide a plausible account of adolescent involvement in problem drinking behaviours due to common etiological causes (Jessor & Jessor, 1977).

The Current Literature Review

The overarching aim of the current research was to review the existing literature on psychosocial risk factors for delinquency and problem drinking. To do so, we examined research published post 1990 examining etiological or psychosocial causes of delinquency or problem drinking, paying particular attention to concurrent delinquency and problem drinking outcomes. We thought it important to review literature published post 1990 to explore whether more recent literature still supports the 1990 psychosocial control model.

We outline four key research objectives underlying the overall aim of this review. First, we will explore the etiological or psychosocial causes of delinquency. Based on previous meta-analytical studies, we expect to find recurrent psychosocial risk factors of delinquency, including family, individual, school, and neighbourhood factors. We also expect peer influence, an element of social learning theory, to emerge as a risk factor for delinquency.

Second, we will explore the etiological or psychosocial causes of problem drinking, and assess whether these factors are consistent with those described in Mak's (1990) psychosocial control theory. We expect that peer influence and sensation seeking will also emerge as risk factors for problem drinking, suggesting the inclusion of these variables in a revised version of psychosocial control theory would strengthen its explanatory power.

Third, we will examine empirical studies that have assessed the etiological or psychosocial causes of delinquency and problem drinking concurrently, and assess whether these risk factors could be encompassed by a revised version of psychosocial control theory (including peer influence and sensation seeking).

Finally, we will distil the findings of all studies reviewed, and classify the significant etiological or psychosocial risk factors for both types of problem behaviours according to types of psychosocial categories. We expect to identify recurrent psychosocial control factors shared by delinquency and problem drinking. This would provide support for a parsimonious model of delinquency and problem drinking that could better assist early detection, prevention, screening, and intervention efforts.

Method

Search Strategies

We chose to conduct a systematic literature review to answer our research objectives, particularly due to the expansiveness of the terms "delinquency" and "problem drinking".

For example, delinquency has been extended to describe aggression, recidivism, sexual assault, sexual promiscuity, illicit drug use, alcohol use, and murder. The extensive description of this term causes difficulties when trying to compare effect sizes as the actual outcome variable being analysed may vary greatly between studies. Similar difficulties are found within the field of problem drinking, which may be used to describe lifetime alcohol use, binge drinking, frequent or excessive drinking, or alcohol-related problems. Due to the lack of commonalities between variables, we chose not to conduct a meta-analysis and instead performed a systematic literature review. We reviewed the English-medium research literature published post 1990. Material accessed included: a) empirical research on risk factors for adolescent problem drinking and delinquency (studies that investigated problem drinking and delinquency separately and together were both included), and b) meta-analyses conducted in the field of adolescent problem drinking and delinquency.

Search terms used for extracting relevant abstracts and full-text articles included: delinquency (title) and adolescent (title) and alcohol use (title) or problem drinking or binge drinking and etiology or psychosocial causes. We then repeated these terms with methodology criteria limited to meta-analyses. Different search terms may have retrieved additional studies; however, we included the search term “apply related words” where applicable to ensure the largest amount of returned results. We then analysed the abstracts, and those that met the above criteria were studied in-depth. Accessed databases were: PsychInfo, PsychArticles, Psychology and Behavioural Sciences, and Medline. We also analysed the reference lists of returned studies and included relevant articles for review. Excluded from consideration were theoretical articles, review articles, case studies, non-empirical research articles, intervention studies, empirical research articles that did not examine psychosocial variables, research that focused on adult samples, and studies that were too specific (e.g., only focused on sexual offenses or homicide rather than general

delinquency). A total of 68 studies met the criteria for inclusion.

Definitions

For the purpose of this review, the term ‘juvenile’ or ‘adolescent’ refers to an individual between the ages of 12 to 17 years. The definition of ‘delinquency’ within the literature implies conduct that does not conform to the legal or moral standards or norms of society. It usually applies only to acts that, if performed by an adult, would be termed criminal (Shoemaker, 2010).

There is ambiguity within the literature regarding the definition of the term problem drinking. This review will include studies assessing the quantity/frequency of alcohol use, high risk drinking leading to alcohol-related problems, and binge drinking. Given that binge drinking is a common drinking style among adolescents, and may lead to alcohol-related problems, it is important to conceptualise this phenomenon in addition to problem drinking (Coker & Borders, 2001). Currently there is no world-wide consensus on how many standard drinks constitute “binge drinking” and the definition varies widely across studies. Recently, the definition of binge drinking was modified in Australia to four or more standard drinks (containing 10 grams of alcohol) per occasion regardless of gender (National Health and Medical Research Council, 2009). For the purpose of the current review, we will use the term “binge drinking” to define drinking patterns where four or more standard drinks are consumed per sitting. However, as this article is examining problem behaviours (as described in Jessor and Jessor’s (1977) theory), we will use the term problem drinking to encompass all other drinking styles from this point onwards.

Results

Risk Factors of Adolescent Delinquency

This search returned 27 studies that focused on etiological factors contributing to adolescent delinquency (see Table 1). The most frequently reported significant risk factor of

delinquency was attachment to delinquent peers cited in 12 studies^{1,2,6-10,12,21,22,24}, followed by: parental attachment cited in 11 studies^{2,7,11,13,16,18-20,22,26,27}, impulsivity (or potentially sensation seeking as the distinction was unclear due to conceptual overlaps) cited in eight studies^{14,16-19,23,26,27}; school bonding cited in seven studies^{2,7,9,18,19,21,25}; low belief in the moral validity of the law^{2,12,18,19} and low emotional empathy^{14,18,19,13} each cited in four studies; and neighbourhood control factors cited in three^{23,26,27}. With the addition of delinquent peers, these risk factors are consistent with those outlined in previous meta-analytic reviews of delinquency (e.g., Cottle et al., 2001; Leschied et al., 2008), as well as elements of Mak's (1990) psychosocial control theory (attachment to parents and school, impulsivity, empathy, and belief in the moral validity of the law).

Insert Table 1 here

Risk Factors of Adolescent problem drinking

A total of 29 studies investigated etiological causes of adolescent problem drinking (see Table 2). The most frequently reported significant risk factor for problem drinking was attachment to delinquent peers reported in 14 studies^{28,29,30,32, 33,35,37-39,41,43, 44,48,49} followed by: parental attachment/bonding cited in 12 studies^{28,29,33,35,37-39,41, 42, 44, 49,52}; school attachment/educational/occupational aspirations cited in 11 studies^{28,30,32,35,39,44,47-49, 54,56}; impulsivity (or potentially sensation seeking as these traits were not distinguished) cited in five studies^{28,34,35,45,53}; and neighbourhood bonding/social control cited in three studies^{31,39,41}. These factors closely match those proposed in Mak's (1990) psychosocial control theory of delinquency (e.g., parental, school, and social bonding, impulsivity). In addition, peer influence was the most cited factor, suggesting incorporating elements of social learning theory with psychosocial control theory will strengthen explanatory value.

Insert Table 2 here

Factors in Concurrent Studies on Delinquency and Problem Drinking

There were only 12 studies included in this review that examined predictors of both

adolescent delinquency and problem drinking (see Table 3). Sensation seeking^{59,63,66-68} and parental attachment^{57,58,62,65,67} were identified as the most frequently reported significant risk factors of problem drinking (five out of five studies; 100%, and five from six studies; 83.3%, respectively), followed by delinquent peers^{57,62,64,67} (four/five studies; 80%) and school attachment^{58,61,62} (three/three studies; 100%). Similarly, delinquent peers^{57,62,64,67} (four/five studies; 80%), sensation seeking^{59,63,67,68} (four/five studies, 80%), and parental attachment^{57,62,65,67} (four/six studies; 66.6%), were the most frequently reported significant risk factors of delinquency. Interestingly, when examined together, impulsivity^{57,59} (two/three studies; 66.6%) emerged as a significant risk factor for delinquency but not problem drinking (zero/two studies; 0%), whereas sensation seeking appeared to be implicated in both.

Insert Table 3 here

Significant Risk Factors of Delinquency and Problem Drinking Across all Studies

Due to the limited number of studies that collectively examined underlying etiological factors for delinquency and problem drinking, it may be more useful to look broadly across the 68 studies. Table 4 summarises the proportion of studies that found a significant relationship between each psychosocial risk factor with delinquency and/or problem drinking. As can be seen from Table 4, adolescent problem drinking and delinquency appear to share key psychosocial control variables and have comparable significance rates: delinquent peers (90% versus 84.2%, respectively), parental bonding (89.5% versus 78.9%, respectively), school bonding/educational aspirations (87.5% versus 81.8%, respectively), neighbourhood bonding factors (66.6% versus 80%, respectively), impulsivity (55.6% versus 90.9%, respectively), and sensation seeking (100% versus 83.3%, respectively). These results also show that psychosocial control factors of empathy and moral belief in the law have been found to be significantly related to adolescent delinquency^{2,12,14,18,19,23} (83.3% and 100%,

respectively), but have rarely been investigated in the field of problem drinking (belief in law, 50%; empathy not investigated)^{35,57}.

Insert Table 4 here

Given that similar psychosocial control factors emerged as significant predictors of both delinquency and problem drinking, it is plausible that psychosocial control theory could provide a reasonable account of adolescent involvement in problem drinking behaviours. As association with delinquent peers, an element of social learning theory, was a prominent risk factor for delinquency (84.2%) and problem drinking (90%), it is likely that the incorporation of this factor into a revised version of psychosocial control theory would provide a more comprehensive account of these two problem behaviours. Further, given that sensation seeking and impulsivity appeared related to different outcomes, it is necessary for a revised version of psychosocial control theory to distinguish between these two traits.

Identified methodological issues. There are some methodological issues within the research that are important to note. For example, the majority of studies did not distinguish between sensation seeking and impulsivity or assess both traits. Of the 20 studies that investigated impulsivity or sensation seeking, only three assessed both these traits^{27,59,68}. Further, it would appear that when measured separately yet concurrently, sensation seeking appears to be implicated in problem drinking and delinquency, whereas impulsivity appears to be specific to delinquency^{27,59,68}. This suggests that the two traits result in different outcomes and we believe two distinct, conceptually focused measures are required to reduce conceptual overlap.

In addition to the conceptual confusion surrounding impulsivity and sensation seeking, the literature appears limited in relation to the assessment of binge drinking. Of the 41 studies investigating problem drinking, only nine specifically addressed binge drinking^{33-35,37,38,46,47,51,54}. Given that binge drinking is a common and troubling drinking style among

adolescents³³, it is important that assessment of problem drinking includes not only the quantity and frequency of alcohol use, but also a measure of binge drinking and alcohol-related problems to establish clear links between the different styles of drinking and their associated outcomes.

Also, approximately half of included studies used cross-sectional methodology and thus do not provide insight into cause and effect relationships. That being said, there were a number of longitudinal studies included that offered an understanding of the direction of discussed relationships. The majority of longitudinal studies reviewed were prospective examinations finding that psychosocial risk factors (such as disrupted family relationships, association with delinquent peers, and school difficulties) tend to occur at an earlier age and may lead to subsequent delinquent and problem drinking behaviours^(e.g.33,38,40,44,50). However, the variables assessed (and variables controlled for) in each study varied, significantly reducing the capacity to really identify shared risk factors of delinquency and problem drinking.

Discussion

The overarching aim of the current research was to review the existing literature on psychosocial risk factors for delinquency and problem drinking. We did so by examining research published post 1990 exploring etiological or psychosocial causes of delinquency and problem drinking, and paying particular attention to concurrent delinquency and problem drinking outcomes. We found recurrent psychosocial control factors shared by delinquency and problem drinking that are encompassed by a revised version of psychosocial control theory that incorporates elements of social learning theory and distinguishes between impulsivity and sensation seeking. This finding provides support for a parsimonious theoretical framework of adolescent delinquency and problem drinking that could better assist early detection, prevention, and intervention efforts.

Psychosocial Risk Factors of Delinquency

The first research objective was to explore the etiological or psychosocial causes of delinquency. Consistent with previous meta-analytic reviews (e.g., Cottle et al., 2001; Leschild et al., 2008), recurrent psychological and sociological control agents were risk factors of adolescent delinquency. More specifically, attachment to deviant peers, weakened attachment to parents, school, and educational/occupational aspirations, low belief in the validity of the law, high levels of impulsivity, and low levels of emotional empathy were found to increase susceptibility to engaging in rule-breaking behaviours.

Excluding the addition of attachment to deviant peers, these risk factors match those described in Mak's (1990) psychosocial control theory of delinquency. It is thought that attachment to traditional significant others, commitment to education and success, and involvement in conventional activities, such as school, refrain adolescents from engaging in unconventional behaviours, such as delinquency through fear of damaging these relationships (Mak, 1990,1991; Hirschi, 1969). In addition, individuals with high levels of impulsivity tend to give in to urges and respond to stimuli without much forethought (Whiteside & Lynam, 2009). These individuals may have difficulty perceiving the potential consequences of unconventional behaviour and are unable to engage in appropriate regulatory actions¹⁸.

Similarly, those lacking emotional empathy are insensitive to the discontent of significant other's and therefore do not fully understand the impact of breaching social norms¹⁸. These individuals may be more likely to engage in delinquent activity as they have minimal concerns about the potentially negative impact their actions may have on others.

Psychosocial Risk Factors of Problem Drinking

The second research objective was to assess the etiological or psychosocial causes of problem drinking, and whether these factors were consistent with those described in Mak's (1990) psychosocial control theory. Consistent with the results of the delinquency research,

etiological or psychosocial risk factors for problem drinking also encompassed psychological and sociological control agents, such as attachment to deviant peers, parents, school, educational and occupational aspirations, and impulsivity. With the addition of deviant peers, these factors are very similar to those described in Mak's (1990) psychosocial control theory (e.g., attachment to parents, school, educational and occupational aspirations, impulsivity, empathy, low belief in the law).

These findings suggest that psychosocial control theory could provide a plausible account of adolescent involvement in problem drinking behaviours. Although found to be significantly related to delinquency, psychosocial control factors of empathy and belief in the moral validity of the law were not extensively examined in the problem drinking literature. Further research is required to determine the relationship between low emotional empathy and belief in the validity of the law with adolescent problem drinking.

Psychosocial Risk Factors in Concurrent Studies of Delinquency and Problem Drinking

The third research objective was to examine empirical studies that assessed etiological or psychosocial causes of delinquency and problem drinking concurrently, and whether these risk factors could be encompassed by psychosocial control theory. The review of studies that investigated associated outcomes of adolescent delinquency and problem drinking concurrently found shared psychosocial risk factors. More specifically, psychological and sociological control factors of attachment to deviant peers, parents, and school, impulsivity, and sensation seeking were all identified. With the addition of attachment to deviant peers and sensation seeking, these factors match those proposed in Mak's (1990) psychosocial control theory. It is interesting to note that studies which assessed for both impulsivity and sensation seeking found impulsivity to be specific to delinquency whereas sensation seeking was implicated in delinquency and problem drinking^{27,59,68}. Those high on the trait of sensation seeking are motivated to seek out various, novel, and thrilling forms of stimulation

(Whiteside & Lynam, 2009; Zuckerman, 1979; Zuckerman & Kuhlman, 2000). High levels of sensation seeking may place adolescents at a heightened risk of engaging in unconventional behaviours such as delinquency and problem drinking because they have a continuous need to pursue stimulation from novel situations (Cooper et al., 2003; Whiteside & Lynam, 2009).

Unfortunately, the majority of studies that have investigated sensation seeking and impulsivity with adolescent delinquency and problem drinking have either not controlled for the other trait or have combined these personality constructs despite strong theoretical evidence suggesting that they are distinct and associated with different outcomes. For example, in a sample of Australian university drinkers, Curcio and George (2011) found that sensation seeking was particularly related to binge drinking, whereas impulsivity was implicated in problematic drinking. Whether these results are similar for adolescents is unknown. Future investigations could use two separate, conceptually focused measures to target only the core aspects of each construct.

Significant Risk Factors of Delinquency and Problem Drinking Across all Studies

The final research objective was to distil the findings of all studies reviewed and classify the significant risk factors according to types of psychosocial categories. We found that delinquency and problem drinking shared key psychosocial control factors as classified by etiological categories, for example; family, peers, school, psychological or individual factors, and environmental factors. Further, we found comparable significance rates for delinquency and problem drinking across all studies. Given the remarkable similarities in risk factors for these two externalising problem behaviours, it is plausible that psychosocial control theory could be extended to provide a reasonable account of adolescent involvement in problem drinking behaviours.

In support of integrating social learning theory with psychosocial control theory, we

found that peer influence was a prominent risk factor of delinquency and problem drinking^(e.g.5-10,28-30,32). Social identification with a peer group that facilitates delinquent behaviours and problem drinking encourages one to adopt these inter-group norms²². Given that peers have been shown to be more influential than parents during the latter stages of adolescence³⁷, association with a peer group that adopts alternative norms and engages in deviant behaviours is likely to be one of the strongest risk factors for adolescent delinquency and problem drinking, and its incorporation into the psychosocial control model is likely to dramatically increase its explanatory power.

Implications for Future Research

In support of Jessor and Jessor's (1977) assumption that common aetiologies cause multiple problem behaviours, we found that adolescent delinquency and problem drinking share recurrent psychosocial control risk factors. Due to the commonalities between psychosocial risk factors for the two externalising variables (e.g., parental and peer attachment, school bonding, impulsivity, sensation seeking, and weak beliefs in the moral validity of the law), we believe that Mak's (1990) psychosocial control model of delinquency, integrated with aspects of social learning theory, could account for variation in problem drinking, above and beyond the contribution from social learning theory alone.

The current literature review has highlighted several directions for future research. First, none of the studies included in this review used qualitative methodology. Research using focus groups and interviews could be targeted at different tiers; such as primary and secondary prevention, for school students and at risk youths with identified criminal records or alcohol problems, respectively. Qualitative research would provide a rich understanding of adolescent problem behaviour, a complex phenomenon, and could also be conducted with stakeholders such as mental health professionals, police workers, and parents.

Second, two separate, conceptually focused measures of impulsivity and sensation

seeking are required to target only the core aspects of each construct to reduce conceptual overlaps within the literature. In addition, the inclusion of a measure of peer influence in a revised version of psychosocial control theory would likely improve its explanatory power even further, as association with delinquent peers was found to be a prominent risk factor for both delinquency and problem drinking.

Third, the relationship between emotional empathy and belief in the moral validity in the law with problem drinking were rarely examined and need to be investigated further. Also, approximately half of the studies used cross-sectional research. In this regard, future studies should be longitudinal in nature and isolate cause and effect relationships.

Fourth, there was limited research within the literature investigating adolescent involvement in binge drinking behaviours. Given that adolescents tend to adopt this drinking style, this relationship should be thoroughly examined. Finally, future research could investigate the temporal sequencing of delinquency and problem drinking to determine psychosocial trajectories. Specifically, research could explore whether there is a progression in the development of multiple problem behaviours or whether it depends on the deviant peer group the adolescent identifies with and the particular norms and behaviours they adopt.

Conclusion

The current study found that delinquency and problem drinking share psychosocial risk factors that are encompassed by extending Mak's (1990) psychosocial control theory to include social learning processes. This model could help gain a better understanding of a range of adolescent problem behaviours. Future investigations could explore whether psychosocial control theory could be extended to explain other health compromising behaviours, such as gambling, sexual promiscuity, and illicit drug use. This research could better direct multi-model early intervention approaches for adolescents. Such approaches could include parenting education programs, increase adolescent engagement with

institutions, schooling systems, and positive peer influences. It may also promote adolescents' understanding of and belief in the validity of laws surrounding drinking and law-breaking behaviour by providing information regarding adverse consequences. Finally, gaining awareness of personality dispositions, such as impulsivity and empathy, implicated in problem behaviours may help design therapeutic intervention and improve early detection and screening strategies for adolescents at risk.

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Table 1
Summary of Etiological or Psychosocial Risk Factors of Adolescent Delinquency

Study	Sample: <i>N</i> , <i>Mage</i> , % Male	Methodology	Key Predictor Variables	Outcome Variable
¹ Baerveldt et al., 2008	990 Dutch students, -, 52%	Longitudinal	1. Peer Relationships*	Delinquency (self-report)
² Boers, et al., 2010	1,552 European students, -, -	Longitudinal	1. Parent Bonding* 2. School Bonding* 3. Deviant Peers*# 4. Values#	1. Delinquency (*) 2. Violent Delinquency (#)
³ Buist, 2010	249 Dutch siblings, 12.4 & 14.5, -	Longitudinal	Sibling Bonding*	Delinquency (self-report)
⁴ Burt, 2008	610, 14, 45%	Cross-sectional	Divorce *	Delinquency (self-report)
⁵ Carroll et al., 2003	965 Aus students, -, 48%	Cross-sectional	Peer Reputation*	Delinquency (self-report)
⁶ Carroll et al., 2008	1460 Aus youths, 14, 49%	Cross-sectional	Peer Reputation*	Delinquency (self-report)
⁷ Cottle et al., 2001	23 studies, 14.7, 83%	Meta-analysis	1. Family* 2. Deviant Peers* 3. Education/IQ* 4. Drug Abuse* 5. Conduct*	Recidivism (official records or self-report)
⁸ Fergusson, et al., 2000	936 NZ youths, -, -	Longitudinal	1. Family 2. Conduct/IQ 3. Deviant Peers*	Offense History (police records & self-report)
⁹ Hartnagel, 1997	1906 Canadian students, -, -	Longitudinal	1. Success Ideology* 2. Deviant Peers*	Criminal Involvement
¹⁰ Haynie, 2002	2,606 US students, , -	Longitudinal	1. Deviant Peers* 2. # Male Friends 3. # Friends*	Delinquency (self-report)
¹¹ Heaven et al., 2004	347 Aus students, 15, 68%	Cross-sectional	1. Psychopathology* 2. Parent Bonding*	Delinquency (self-report)
¹² Johnson et al., 2001	1,725 US youths, -, -	Longitudinal	1. Religiosity* 2. Belief in Law 3. Deviant Peers*	Delinquency (self-report)
¹³ Keijers et al., 2009	938 youths, 13, -	Longitudinal	1. Parent Control* 2. Parent Support*	Delinquency (self-report)
¹⁴ Koolhof et al., 2007	508 youths, -, 100%	Longitudinal	1. Impulsivity* 2. Empathy* 3. Psychopathology 4. IQ* 5. Parenting 6. Peer Factors	Delinquency (court records and self-report)
¹⁵ Kingree et al., 2003	272 detainees, 14, 62%	Cross-sectional	1. Drugs/Pathology 2. Neglect*	Recidivism (offense records)

¹⁶ Leschied et al., 2008	38 studies, 10.5, 65%	Meta-analysis	1. Family* 2. Impulsivity* 3. School Factors	Delinquency (self-report)
¹⁷ Luengo et al., 1994	1,226 youths, 14, 47.5%	Longitudinal	1. Impulsivity*	Delinquency (self-report)
¹⁸ Mak, 1990	793 Aus youths, 15.63, 51%	Cross-sectional	1. Parents* 2. School/Law* 3. CEOG 4. Impulsivity* 5. Empathy*	Delinquency (self-report)
¹⁹ Mak, 1991	206 Aus youths, 15, 61%	Cross-sectional	1. Impulsivity* 2. Empathy* 3. Parents* 4. School/CEOG* 5. Belief in Law*	Delinquency (official reports)
²⁰ Mak, 1996	206 Aus youths, 15, 61%	Cross-sectional	1. Parenting Style*	Delinquency (official reports)
²¹ Mak et al., 2003	420 Aus students, 15, 54%	Cross-sectional	1. Pathology* 2. School* 3. Group Identity*	Delinquency (self-report)
²² Mak & Kang, 2005	280 Aus students, 16.3, 36%	Cross-sectional	1. Parents* 2. Rebel Identity*	Delinquency (self-report)
²³ Meier, et al., 2008	85, 301 US students, 13.62, 50%	Cross-sectional	1. Impulsivity* 2. Callousness* 3. Social Control*	Delinquency (self-report)
²⁴ Monahan et al., 2009	1354 US offenders, 16, 86%	Cross-sectional	1. Deviant Peers* 2. Peer Resistance*	Antisocial Behaviour (self-report)
²⁵ Montgomery et al., 2011	177 US detainees, 14, 47.6%	Cross-sectional	1. Alcohol/Conduct 2 School Attitudes* 3. Psychopathology 4. Gang Membership 5. Peer drug use 6. Family bonding	Delinquency (self-report)
²⁶ Neumann et al., 2010	4,597 youths, - 51%	Longitudinal	1. Social Control* 2. Family Type* 3. Impulsivity* 4. Parental Control*	Antisocial Behaviour (self-report)
²⁷ White et al., 2001	698 youths, -, 100%	Longitudinal	1. Executive Function 2. Impulsivity* 3. Sensation Seeking* 4. SES* 5. Parent Hostility*	Delinquency

Note. Only key variables for each study included in table. Variables included for each study controlled for all predictor variables in analyses; * = significant variable; # = significant predictor of violent delinquency in study 31; - = not reported; Aus = Australian; NZ = New Zealand; US = United States of America; SES = Socioeconomic Status.

Table 2

Summary of Etiological or Psychosocial Risk Factors of Adolescent Problem Drinking

Study	Sample: <i>N</i> , <i>M</i> age, % Male	Methodology	Key Predictor Variables	Outcome Variable
²⁸ Baker, 2010	4,834 youths, -, -	Cross-sectional	1. Self Control* 2. Delinquent Peers* 3. Social Bonds*	Problem Drinking
²⁹ Bezinović et al., 2009	2219 students, 14, -	Cross-sectional	1. Family, Peer & Sibling Alcohol use*	Alcohol use
³⁰ Bryant et al., 2003	1,897 US youths, 13.57, 48.2%	Longitudinal	1. School Bonding* 2. Parental/Peer Support*	Frequency Alcohol Use
³¹ Buu et al., 2009	220 youths, -, 100%	Longitudinal	1. Pathology* 2. Neighbourhood* 3. Family Mobility*	Alcohol Use (frequency)
³² Cheadle et al., 2011	727 youths, -, -	Longitudinal	1. School* 2. Delinquent Peers*	Problem Drinking
³³ Coker & Borders, 2001	17,424 US students, -, -	Longitudinal	1. Parental Support* 2. Peer Values* 3. Community 4. School Climate	Adolescent Problem Drinking (Binge)
³⁴ Colder & Chassin, 1997	427 adolescents, 14.6, 54%	Cross-sectional	1. Affectivity* 2. Impulsivity*# 3. Parental Alcoholism	1. Alcohol Frequency/Quantity (*) 2. Alcohol-Related Impairment (#) Binge Drinking
³⁵ Costello et al., 2006	938 students, 15.7, 46.5	Cross-sectional	1. Peer Delinquency* 2. Religiosity/Belief* 3. Parental Bonding* 4. Self-Control*	Binge Drinking
³⁶ Costello et al., 1999	1,420 US youths, -, -	Longitudinal	1. Family AODM* 2. Parenting Style	Alcohol Use (frequency)
³⁷ Crawford & Novak, 2002	18,116 US students, -, 47%	Longitudinal	1. Parent Attachment* 2. Peer Alcohol Use*	Alcohol Use (quantity/binge drinking)
³⁸ Crosnoe, 2006	11,927 US students, 15, 49%	Longitudinal	1. Opportunity Factors 2. Bonding Factors*	Adolescent Drinking (Frequency/Binge)
³⁹ Ennett et al., 2008	6,891 US adolescents, 13.12, 51%	Longitudinal	1. Family Context* 2. Peer Context* 3. School Context* 4. Neighbourhood*	Alcohol Misuse (quantity, frequency, problems)
⁴⁰ Fagan et al., 2005	1,370 Aus youths, -, -	Longitudinal	1. Parent/Sibling AODM* 2. Stressful Life Events	Alcohol use (frequency)
⁴¹ Ferguson & Meehan, 2011	8,256 US youths, 14, 49.7%	Cross-sectional	1. Family Involvement* 2. Psychopathology 3. Peer Delinquency* 4. Negative Community* 5. Positive School	Alcohol Use (frequency)
⁴² Goncy & Van Dulmen, 2010	9,148 youths, 15.68, 49%	Cross-sectional	1. Parent Involvement*	Alcohol Use & Related Problems

⁴³ Haller et al., 2010	405 participants, -, -	Longitudinal	1. Parental Alcoholism* 2. Peer Substance Use*	Adult Alcohol Use Disorder
⁴⁴ Henry et al., 2009	1,064 US students, 12.3, 45%	Longitudinal	1. Peer attachment* 2. School attachment* 3. Family attachment*	Alcohol Use (frequency)
⁴⁵ Herting et al., 2010	33 US youths, -, 51%	Cross-sectional	1. Impulsivity*	Alcoholism
⁴⁶ Herman-Stahl et al., 2008	4734 adolescents, -, -	Cross-sectional	1. Maternal Distress* 2. Paternal Distress	Binge Drinking
⁴⁷ Kenny & Schreiner, 2009	777 Aus offenders, -, 87%	Cross-sectional	1. School attendance* 2. Father absence* 3. Abuse or neglect	High Risk Drinking (frequency, quantity, binge)
⁴⁸ Koposov et al., 2002	387 students, -, -	Cross-sectional	1. School Defiance* 2. Peers* 3. Stress*	Frequency Alcohol use
⁴⁹ Mason et al., 2007	363 teens, -, -	Longitudinal	1. Parent Bonding* 2. School* 3. Peer Use* 4. Delinquency*	Alcohol Use (quantity/freq)
⁵⁰ Measelle et al., 2006	496 adolescents, 13, 0%	Longitudinal	1. Negative Affect* 2. Support*	Alcohol use
⁵¹ Nation & Heflinger, 2006	214 US, 15, 73%	Cross-sectional	1. Peer Relationships 2. Family/AOD 3. Psychopathology	Alcohol Use frequency, binge drinking
⁵² Okulicz-Kozaryn, 2010	3,087 youths, 14.5, 50%	Cross-sectional	1. Parental Control* 2. Parental Support* 3. Risky Behaviour*	Alcohol Use (frequency)
⁵³ Putniņš, 2006	900 Aus youths, -, 90%	Cross-sectional	1. ADHD/Impulse Scale* 2. Conduct Problems	Alcohol Use (frequency)
⁵⁴ Pitkänen et al., 2008	347 participants, -, -	Longitudinal	1. Family Adversity* 2. Low School Success* 3. Conduct/Truancy*	Binge Drinking
⁵⁵ Sieving et al., 2000	413 US youths, -, 41.7%	Longitudinal	1. Parent Norms* 2. Family Problems	Alcohol Use (frequency)
⁵⁶ Voelkl & Frone, 2000	208 US students, -, 37%	Cross-sectional	1. Affectivity 2. Rebel* 3. Impulsivity 4. School* 5. Expectancies*	Alcohol use at school

Note. Only key variables for each study included in table. Variables included for each study controlled for all predictor variables in analyses; * = significant variable; # denotes significant predictor of alcohol-related impairment in study 7; US = United States of America; - = not reported; AODM = Alcohol and Other Drug and Mental Health Issues; Assessment; Aus = Australia; AOD = Alcohol and other drug use.

Table 3

Summary of Etiological or Psychosocial Risk Factors of Adolescent Delinquency and Problem Drinking

Concurrently

Study	Sample	Methodology	Key Predictor Variables	Outcome Variable
⁵⁷ Barnes et al., 2005	699 adolescents, 14.5, -	Longitudinal	1. Impulsivity# 2. Morality 3. Parental Control*## 4. Deviant Peers*##	1. Alcohol Misuse (*) 2. Delinquency (#)
⁵⁸ Coley et al., 2004	819 youths, -, -	Longitudinal	1. Parental Control* 2. Parent/Peer 3. Neighbourhood 4. Out-of-School*	1. Alcohol Use (*) 2. Delinquency
⁵⁹ Cooper et al., 2003	1,978 US youths, 16, 66%	Longitudinal	1. Negative affect 2. Coping# 3. Sensation Seek*## 4. Impulsivity#	1. Alcohol (quantity/frequency) (*) 2. Delinquency (#)
⁶⁰ Dembo et al., 1992	227 US detainees, 15, 77%	Longitudinal	1. SV/PA*## 2. Parent CAODM*##	1. Frequency alcohol use * 2. Delinquency (#)
⁶¹ Ellickson et al., 2003	6,527 US students, -, 52%	Longitudinal	1. School*## 2. Substance Use*##	1. Frequency Alcohol use* 2. Delinquency (#)
⁶² Jessor et al., 2003	3335 students, -, -	Cross-sectional	1. Family/Peer*## 2. School*## 3. Neighbourhood*##	1. Problem Drinking (*) 2. Delinquency (#)
⁶³ Koposov et al., 2005	229 Russian inmates, 16.4, 100%	Cross-sectional	1. Novelty Seeking* 2. Parental Bonding 3. Psychopathology*	1. Delinquent Alcohol Abusers
⁶⁴ Maggs & Hurrelmann, 1998	491 Germans, 12.6, 54%	Longitudinal	1. Peer Closeness* 2. Position in Group#	1. Frequency Alcohol use* 2. Delinquency (#)
⁶⁵ Mak & Kinsella, 1996	393 Aus students, 16.21, 40%	Cross-sectional	1. Parent Bonding*## 2. Alcohol Misuse# 3. Home Intactness#	1. Delinquency (#) 2. Alcohol Use (*)
⁶⁶ Newcomb & McGee, 1991	595 students, -, -	Longitudinal	1. Sensation Seeking*	1. Alcohol Use* 2. Deviance
⁶⁷ Wanner et al., 2009	3,037 Canadian youths, -, 100%	Longitudinal	1. Disinhibition*## 2. Parental Control*## 3. Deviant peers*##	1. Theft/Violence (#) 2. Frequency Alcohol use*
⁶⁸ Zimmermann, 2010	144 Swiss youths, 17, 66%	Cross-sectional	1. Openness 2. Impulsivity 3. Sensation Seek*	Risk – Alcohol and Law Breaking (*)

Note. Only key variables for each study included in table. Variables included for each study controlled for all predictor variables in analyses; * indicates significant predictors of alcohol use and # indicates significant predictors of delinquency; - = not reported; US = United States of America; SV = Sexual Victimization; PA = Physical Abuse; CAODM = Criminality, Alcohol, Drug or Mental Problems; Aus = Australian.

Table 4

Summary of Findings on Significant Etiological or Psychosocial Risk Factors for Adolescent Delinquency and Problem Drinking across all Studies (N=68)

Classes of Predictor Variable	<u>Delinquency</u>		<u>Problem Drinking</u>	
	<i>N</i>	Number of Significant Findings	<i>N</i>	Number of Significant Findings
Family Factors				
Parental Bonding/Control	19	15(78.9%)	19	17(89.5%)
Family Structure	3	3(100%)	5	4(80%)
Parental Criminality/ AODM	1	1(100%)	8	6(75%)
Peer Factors				
Delinquent Peers	19	16(84.2%)	20	18(90%)
School Factors				
School Bonding	11	9(81.8%)	16	14(87.5%)
Individual Factors				
Impulsivity	11	10(90.9%)	9	5(55.6%)
Psychopathology	10	6(60%)	17	11(64.7%)
Sensation Seeking	6	5(83.3%)	5	5(100%)
Low Belief in Law	6	5(83.3%)	2	1(50%)
Low Empathy	4	4(100%)	0	0
Abuse/Neglect	2	2(100%)	3	1(33.3%)
Low IQ	3	2(66.7%)	0	0
Environmental Factors				
Neighbourhood	5	4(80%)	6	4(66.6%)

Note. Only predictors found to be significant in two or more studies included for brevity. Categories have been condensed for clarity. AODM = Alcohol and other drug or mental health issues; IQ = Intelligence quotient.