



# Negative urgency mediates the relationship between childhood maltreatment and problems with alcohol and cannabis in late adolescence



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## HIGHLIGHTS

- Examined paths from childhood maltreatment to substance problems via impulsivity.
- Negative urgency mediated link between maltreatment and alcohol and cannabis problems.
- Other facets of impulsivity were not unique mediators of these associations.

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## ABSTRACT

**Background:** Childhood maltreatment is an important risk factor for problems with alcohol and other drugs such as cannabis. Although this link has been well established, the mechanisms in this association require further study. High levels of impulsivity and difficulties with emotion regulation are often associated with childhood maltreatment. Negative urgency – an emotion-based facet of impulsivity – is a strong predictor of substance use problems and may be a particularly relevant facet of impulsivity in the link between childhood maltreatment and alcohol and cannabis outcomes. However, few studies have examined the specific mediational pathway from childhood maltreatment to alcohol and cannabis problems through negative urgency.

**Objectives:** We tested the hypothesis that the associations between history of childhood maltreatment and current alcohol and cannabis problems would be mediated by negative urgency, but not other facets of impulsivity.

**Methods:** Participants (N = 232), who were in late adolescence (mean age = 19.75), completed self-report measures of different facets of impulsivity, past childhood maltreatment, and current alcohol and cannabis use and problems.

**Results:** In analyses including several facets of impulsivity as simultaneous mediators, negative urgency was the only facet to mediate the associations of childhood maltreatment severity with alcohol and cannabis problems.

**Conclusions:** These findings provide support for negative urgency as a unique mediator of the associations between childhood maltreatment and both alcohol and cannabis problems, suggesting that future work on mechanisms in these associations should focus on mood-based impulsivity.

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## 1. Introduction

Substance-related problems pose a significant burden to society. Alcohol and cannabis are two of the most widely used substances, making them an important focus of research on substance-related problems. The developmental period spanning late adolescence and young adulthood coincides with the highest observed rates of alcohol and drug use

(Substance Abuse and Mental Health Services Administration, 2014), and problematic substance use (i.e., heavy use that is associated with negative consequences) during this developmental period has been widely documented (Hingson, Heeren, Winter, & Wechsler, 2005). Increasingly, problems with alcohol and other drugs have been conceptualized as developmental phenomena (Brown et al., 2008; Masten, Faden, Zucker, & Spear, 2008). According to this framework, distal factors such as childhood family environment play a crucial role in the later development of substance problems (Faulkner, Goldstein, & Wekerle, 2014; Zucker, Donovan, Masten, Mattson, & Moss, 2008).

Childhood maltreatment, which encompasses abuse (emotional, physical, and sexual) and neglect (emotional and physical), is a potent

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risk factor for the development of problems with alcohol and drugs (Annerbäck, Sahlqvist, Svedin, Wingren, & Gustafsson, 2012; Goldstein et al., 2013; Rogosch, Oshri, & Cicchetti, 2010; Schwandt, Heilig, Hommer, George, & Ramchandani, 2013). Retrospective reports from adults with substance use problems suggest that they are more likely than the general population to have experienced childhood maltreatment (Dube et al., 2003; Fetner, McMillan, Sareen, & Asmundson, 2011; Schwandt et al., 2013). Among adolescents and young adults, a history of childhood maltreatment has been linked to heavy episodic drinking and alcohol use disorders in large, nationally representative studies (Goldstein et al., 2013; Shin, Edwards, & Heeren, 2009). Further, self-reports of traumatic experiences and sexual victimization prior to college entry have been prospectively linked with increased risk for alcohol and other substance-related problems during the first year of college (Griffin, Wardell, & Read, 2013; Read et al., 2012). Although less research has focused specifically on cannabis, there is also evidence that childhood maltreatment is associated with cannabis problems throughout adolescence (Rogosch et al., 2010).

While there is a great deal of evidence that childhood maltreatment is an important risk factor for problems with alcohol and other drugs such as cannabis, the mechanisms that may account for these associations are in need of further investigation (see Pollak, 2005). Some research suggests that impulsivity may be relevant in the link between childhood maltreatment and substance outcomes, given that impulsivity is associated with both a history of childhood maltreatment (Gagnon, Daelman, McDuff, & Kocka, 2013; Sujan, Humphreys, Ray, & Lee, 2014) and risk for problems with alcohol and drugs (de Wit, 2009; Verdejo-García, Lawrence, & Clark, 2008). Research suggests that impulsivity is a multifaceted construct, and distinguishing among facets of impulsivity has been shown to have utility in clarifying the role of impulsivity in risky behavior (Smith et al., 2007). Whiteside and Lynam (2001) conducted a factor analysis on commonly used measures of impulsivity and identified four separable facets: (i) lack of perseverance (difficulty staying focused), (ii) lack of premeditation (acting without forethought), (iii) sensation seeking (seeking new and exciting experiences) and (iv) negative urgency (acting rashly in response to negative emotions). More recently, a positive emotion variant of urgency, known as positive urgency, has also been identified (Cyders et al., 2007). Numerous studies support the discriminant validity of these impulsivity facets (Cyders & Smith, 2007; Smith et al., 2007; Whiteside, Lynam, Miller, & Reynolds, 2005). In particular, these five facets of impulsivity have been found to relate differentially to alcohol use and alcohol problems outcomes (for review, see Coskunpinar, Dir, & Cyders, 2013). Thus, investigation of the unique, specific contribution of each of these facets to substance use and other risky behavior is generally recommended (Smith et al., 2007; Whiteside et al., 2005).

Importantly, among these five facets of impulsivity, negative urgency is the most consistent predictor of alcohol problems (Coskunpinar et al., 2013). Consistent with the finding that negative urgency is uniquely associated with coping motives for drinking (Adams, Kaiser, Lynam, Charnigo, & Milich, 2012; Settles, Cyders, & Smith, 2010), the robust association between negative urgency and alcohol problems may reflect a tendency for individuals who drink in response to negative mood to drink in riskier ways and to lack other forms of adaptive coping strategies (e.g. Merrill & Read, 2010; Smith et al., 2007). As a result, even when level of alcohol consumption is held constant across individuals, those who drink in response to negative mood are likely to experience more negative consequences and alcohol problems. Indeed, several studies have found that negative urgency predicts unique variance in alcohol-related problems after controlling for levels of alcohol use (Curcio & George, 2011; Magid & Colder, 2007; Martens, Pedersen, Smith, Stewart, & O'Brien, 2011). In addition, negative urgency has also been shown to be predictive of cannabis use (Kaiser, Milich, Lynam, & Charnigo, 2012; Robinson, Ladd, & Anderson, 2014), although the relationship between negative urgency and cannabis problems has received less attention.

Further, negative urgency is a potentially relevant construct for understanding the association between childhood maltreatment and impulsivity. For example, maltreated children and adolescents show heightened arousal to negative emotions (Cicchetti & Curtis, 2005), as well as impulsive behavior in emotional contexts (Maughan & Cicchetti, 2002). Perhaps the emotional dysregulation and impulsive behavior patterns that are characteristic of individuals with a history of childhood maltreatment make them more likely to act rashly in response to negative emotions, which is the hallmark of negative urgency. Some support for this notion comes from a recent study which found that childhood maltreatment was correlated with higher scores on negative urgency (Gagnon et al., 2013), although a separate study did not find support for this association (Sujan et al., 2014). Thus, more research on the association between childhood maltreatment and negative urgency is needed.

Given that childhood maltreatment appears to be related to higher levels of negative urgency, and negative urgency is a risk factor for problematic substance use, it follows that negative urgency could be an important mediator in the link between childhood maltreatment and substance problems in late adolescence. Conceptually, negative urgency is particularly relevant among different facets of impulsivity, given that impulsive, dysregulated behavior in response to negative emotions may occur with greater frequency among individuals with a history of childhood maltreatment. This study aimed to examine negative urgency as a unique mediator of the association between childhood maltreatment and substance use problems while accounting for the concurrent mediational role of other impulsivity facets. We hypothesized that negative urgency (but not other facets of impulsivity) would mediate the link between childhood maltreatment and alcohol and cannabis problems. We also expected these indirect associations to be significant even after controlling for heavy drinking frequency (when predicting alcohol problems) and frequency of cannabis use (when predicting cannabis problems).

## 2. Method

### 2.1. Participants

Participants recruited in late adolescence ( $N = 232$ ;  $n = 122$  women) completed a baseline assessment as part of a screening procedure for an experimental study. Mean age was 19.75 years ( $SD = 1.06$ ; Range = 18–25), 97% ( $n = 226$ ) were age 21 or younger, and 91% ( $n = 212$ ) were legal drinking age (i.e., age 19 in Ontario, Canada). Seventy-four percent ( $n = 171$ ) were full-time students. Participants selected one or more of the following categories to describe their ethnic/racial background: Caucasian ( $n = 138$ ; 59%), Asian ( $n = 29$ ; 13%), East Indian ( $n = 16$ , 7%), Hispanic/Latino ( $n = 20$ ; 9%), Black/African American ( $n = 30$ ; 13%), Native North American ( $n = 8$ ; 3%), Pacific Islander ( $n = 2$ ; 1%), and other ( $n = 30$ ; 13%). Participants reported a mean of 19.12 ( $SD = 12.86$ ) drinking days in the past 90 days, with an average of 5.12 ( $SD = 2.32$ ) drinks per drinking day and 11.71 ( $SD = 11.58$ ) heavy drinking episodes (defined as 4+ drinks for women / 5+ drinks for men). Seventy-two percent of the participants reported using cannabis during the past 90 days ( $n = 167$ ). Those participants who had used cannabis within the past 90 days reported a mean 25.29 ( $SD = 34.14$ ) days of use.

### 2.2. Recruitment and procedure

Recruitment consisted primarily of Internet advertisements on public and university websites targeting social drinkers in the Greater Toronto Area. Due to the aims of the larger study, the primary eligibility criteria included at least one heavy drinking episode in the past 30 days, no past alcohol treatment or current desire/attempts to reduce drinking, and no contraindications for alcohol use. Cannabis users were not specifically targeted. These criteria were evaluated in a telephone

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