The intervening role of urgency on the association between childhood maltreatment, PTSD, and substance-related problems

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HIGHLIGHTS
• Emotional abuse, negative urgency, positive urgency and PTSD were indicators of ORP.
• Other types of abuse were not related to PTSD or ORP in the model.
• PTSD was the only variable to have a significant direct relation to ORP.
• Negative urgency and emotional abuse had significant indirect paths to ORP via PTSD.

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ABSTRACT
A range of risk factors lead to opioid use and substance-related problems (SRP) including childhood maltreatment, elevated impulsivity, and psychopathology. These constructs are highly interrelated such that childhood maltreatment is associated with elevated impulsivity and trauma-related psychopathology such as posttraumatic stress disorder (PTSD), and impulsivity—particularly urgency—and PTSD are related. Prior work has examined the association between these constructs and substance-related problems independently and it is unclear how these multi-faceted constructs (i.e., maltreatment types and positive and negative urgency) are associated with one another and SRP. The current study used structural equation modeling (SEM) to examine the relations among childhood maltreatment, trait urgency, PTSD symptoms, and SRP in a sample of individuals with a history of opioid use. An initial model that included paths from each type of childhood maltreatment, positive and negative urgency, PTSD and SRP did not fit the data well. A pruned model with excellent fit was identified that suggested emotional abuse, positive urgency, and negative urgency were directly related to PTSD symptoms and only PTSD symptoms were directly related to SRP. Furthermore, significant indirect effects suggested that emotional abuse and negative urgency were related to SRP via PTSD symptom severity. These results suggest that PTSD plays an important role in the severity of SRP.

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1. Introduction

Opioid use and misuse is a serious public health problem that is associated with chronic infectious disease (e.g., hepatitis B and C, HIV), high mortality rates, and significant functional impairment (Volkow, Frieden, Hyde, & Cha, 2014). People who use opioids, including misusing prescription opioids and heroin, often report extensive histories of childhood maltreatment (Daigne et al., 2015; Kessler et al., 2010). The severity of such maltreatment is correlated with the severity of substance use broadly and substance use related problems (SRP) specifically (Conroy, Degenhardt, Mattick, & Nelson, 2009; Heffernan et al., 2000). SRP are defined as emotional, physical, financial, and biological impairment that are attributed to the use of substances, which are substantial for those who use opioids (Kiluk, Dreifuss, Weiss, Morgenstern, & Carroll, 2013). For example, increased guilt, shame, and decrements to one's physical health because of opioid use are considered SRP. Not all adults who were victimized as children, however, use opioids or experience SRP. This variability suggests that there are important intermediary factors that influence how maltreatment affects later opioid use and problems (Howdestad, Tommyr, Wekerle, & Thornton, 2011). Understanding such pathways are necessary to improve prevention and treatment efforts for problematic opioid use.

Childhood maltreatment refers to the range of abuse and neglect children experience from caregivers, including emotional abuse,
emotional neglect, physical abuse, physical neglect, and sexual abuse. Although there is considerable co-occurrence of abuse types, there is evidence that each confers unique risk for future maladaptive outcomes, such as substance use (Senn & Carey, 2010). For example, the type of abuse experienced was associated with the type of substance used and the severity of impairment in a sample of adults with substance use disorder (Tommyr, Thornton, Draca, & Wekerle, 2010). Few studies, however, have examined how different types of childhood maltreatment are associated with SRP among those who use opioids. Instead, the majority of studies have either treated maltreatment as a unidimensional construct—ignoring the potential differences between maltreatment types—or focused on a single maltreatment type (Clemmons, Walsh, DiLillo, & Messman-Moore, 2007; De Bellis, 2002; Higgins, 2004; Higgins & McCabe, 2001; Simpson & Miller, 2002). It therefore remains unclear if and how specific types of childhood maltreatment are related to SRP.

A proposed pathway by which early traumatic experiences, such as childhood maltreatment, leads to substance use problems (e.g., SRP) is via trait impulsivity (Beauchaine & Gatze-Kopp, 2012). That is, exposure to child maltreatment may contribute to systematic patterns of rash behavior that increase risk for opioid use and SRP. Impulsivity is not unitary, however, and growing evidence supports the presence of multiple impulsivity-related traits (e.g., Depue & Collins, 1999; Sharma, Markon, & Clark, 2014; Whiteside & Lynam, 2001). A prominent model (Whiteside & Lynam, 2001) describes impulsivity-related traits including negative urgency (rash action under conditions of negative affect), lack of premeditation (acting without forethought or consideration of consequences), lack of perseverance (difficultly persisting on boring or challenging tasks), sensation seeking (pursuit of novel, exciting experiences even when dangerous), and positive urgency (rash action under conditions of positive affect). The literature on how these impulsivity traits are related to opioid use and SRP lags behind the study of other substances (Mitchell & Potenza, 2014; Verdejo-García, Bechara, Recknor, & Pérez-Garcia, 2007), partly due to including opioid use as part of generic “substance use” or “illicit drug use” measures rather than as a specific outcome. Prior work has indicated that positive and negative urgency may be most relevant to psychopathology and substance use (Peters, Upton, & Baer, 2012; Weiss, Tull, Sullivan, Dixon-Gordon, & Gratz, 2015). Others have suggested that urgency may be more strongly related to SRP than other impulsivity-related constructs. In two studies where impulsivity was measured via performance on behavioral tasks, those with a history of opioid use performed more poorly on tasks involving affect-related decision making relative to controls (Baldacchino, Balfour, & Matthews, 2015; Passetti, Clark, Mehta, Joyce, & King, 2008). There were no other notable differences on measures of impulsivity between these groups. These data suggest that SRP may be more closely tied to urgency than other facets of impulsivity.

Childhood maltreatment and urgency are also associated with post-traumatic stress disorder (PTSD) (Contractor, Armour, Forbes, & Elhai, 2016). It is proposed that an inability to cope with the strong negative emotions that result from childhood maltreatment markedly increases risk for PTSD. In an effort to cope with PTSD symptoms and these other risk factors, the individual may turn to using substances (Weiss, Tull, Anestis, & Gratz, 2013). Indeed, estimates of the comorbidity between PTSD and those with a history of substance use disorder for opioids is as high as 62% (Dore, Mills, Murray, Teesson, & Farrugia, 2012; Mills, Teesson, Ross, & Peters, 2006). Furthermore, PTSD is associated with more severe substance-related impairment and poorer response to substance use disorder treatment (Mills, Teesson, Ross, & Darke, 2007; Weiss et al., 2015).

Taken together, the current literature supports relations between childhood maltreatment, urgency, PTSD, and SRP. There are important nuances to these relations, however. The type of maltreatment experienced may be relevant to impulsivity severity, PTSD symptom severity, and SRP. Furthermore, there are likely indirect effects among these variables (e.g., the effect of childhood maltreatment types on SRP via urgency). Yet it is unclear as to how these associations manifest. Structural equation modeling (SEM) can evaluate this set of relations in that multiple paths can be tested simultaneously and variables can serve as both outcomes and predictors within the same model.

The present study used SEM to examine the relation between types of childhood maltreatment, types of urgency, PTSD, and SRP in those who have used opioids. The initial model hypothesized that all types of childhood maltreatment would be associated with impairments in positive and negative urgency and PTSD. Furthermore, both types of urgency would be associated with PTSD and SRP. Finally, PTSD was hypothesized to be related to SRP.

2. Methods

2.1. Participants

Participants were 84 individuals with a history of opioid use, defined as having used heroin or misused prescription opioids for >1 year (Heroin: M = 4.87 years, SD = 5.87; Prescription opioids: M = 6.98 years, SD = 6.02), met lifetime DSM-IV criteria for substance abuse: opioid, and identified opioids as their substance of choice. The majority of participants used opioids in the past month (n = 62, 73.8%), excluding use related to a treatment program. A portion of the sample 28.6% (n = 24) was currently enrolled in methadone maintenance treatment (MMT). Exclusion criteria included active psychosis and non-English speaking. Participants were included if they used other substances. Historical use of substances (years of regular use) were as follows: Alcohol: M = 5.64, SD = 7.90; Cocaine: M = 5.01, SD = 7.20; Cannabis: M = 10.98, SD = 11.83.

Participants were M = 35.27, SD = 8.26 years old. The majority were male (n = 45, 53.6%). The majority of the sample was at or below the federal poverty level, earning less than $10,000 per year (n = 46, 54.8%). The sample was representative of Northern New England in that the majority self-identified as White (n = 72, 85.7%). The remaining participants self-identified as African-American (n = 2, 2.4%), Asian American (n = 2, 2.4%), Native American (n = 4, 4.8%), Bi-Racial (n = 2, 2.4%), and “Other-group” (n = 2, 2.4%). Two participants (2.4%) self-identified as Latino. Participants were recruited from the community through a series of targeted internet advertisements (e.g., Craigslist and Facebook) and through flyers posted in local businesses.

2.2. Measures

2.2.1. Childhood Trauma Questionnaire (CTQ; Bernstein, Ahluvalia, Pogge, & Handlesman, 1997)

The CTQ is a 28-item self-report scale that assesses five categories of negative childhood experiences: emotional neglect, emotional abuse, physical neglect, physical abuse, and sexual abuse. Each item is assessed on a scale from 0 to 5. The scale ranges from 0 to 5, with higher scores indicating greater abuse. Internal consistency for the subscales was excellent, ranging from α = 0.80 to 0.96.

2.2.2. Short Inventory of Problems-Revised (SIPS-R; Kiluk et al., 2013)

The SIPS-R is a 17-item measure of the negative consequences of drug use or drinking. The current study specified that the SIPS-R is associated with current problems related to substances, which are defined as those experienced in the last three months. Items are rated on a scale from 0 = never to 3 = daily or almost daily, with total scores ranging from 0 to 51. Higher scores indicate greater impairment due to substances. Examples of problems include feeling guilty or shame when using substances, having their physical health harmed by using substances, or having their social life negatively affected by using substances. Internal consistency for the total scale was excellent, α = 0.98.
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