The relationship among depressive symptoms, urgency, and problematic alcohol and cannabis use in community adults

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HIGHLIGHTS

- Negative urgency explained the relationship between depression and substance use.
- Urgency level did not affect the association between depression and alcohol use.
- Higher urgency was related to a stronger depression – cannabis use relationship.
- The relationship patterns diverged across negative and positive urgency.

ARTICLE INFO

ABSTRACT

Background: This study examined alternative models for how negative and positive urgency influence the relationship between depressive symptoms and alcohol and cannabis use in a community sample.
Methods: Participants included adults ($n = 675$; age = 42.57, $SD = 15.66$; 65.0% female; 74.2% White) in the community sample from the Rockland Project by the Nathan Kline Institute. Path analyses were conducted.
Results: Negative urgency was a unique mediator in the relationship between depressive symptoms and problematic alcohol use ($\beta = 0.121$, 95% CI = 0.060–0.182) and problematic cannabis use ($\beta = 0.120$, 95% CI = 0.060–0.179). Negative and positive urgency significantly moderated the relationship between depressive symptoms and problematic cannabis use (negative urgency: $\beta = 0.092$, 95% CI = 0.040–0.145; positive urgency: $\beta = 0.070$, 95% CI = 0.022–0.119), such that the relationship was positive at high levels and negative at low levels of urgency. The patterns and levels of the relationships between depressive symptoms and cannabis use differed between negative and positive urgency. Neither urgency trait moderated the relationship between depressive symptoms and problematic alcohol use.
Conclusions: Despite being strongly related, negative and positive urgency have distinct roles in the relationship between depressive symptoms and problematic alcohol and cannabis use. Previous finding with younger samples that do not include both traits in the model at time generalize and at other times do not replicate, which warrants the continued examination of how these traits impart risk across the lifespan.

1. Introduction

Depression, and alcohol and cannabis use disorders are prevalent in the general population, with lifetime prevalence rates of 16.6% (Kessler et al., 2012, 2005), 29.1% (Grant et al., 2015), and 6.3% (Hasin et al., 2016) respectively. Depression frequently co-occurs with both alcohol and cannabis use disorders (Grant et al., 2015, 2004; Hasin et al., 2016); understanding factors influencing the relationship between depressive symptoms and problematic alcohol and cannabis use is important for prevention and intervention.

Negative and positive urgency (i.e., the tendency to act rashly under extreme negative and positive emotions, respectively) are impulsive personality traits that are prime candidates that may influence the relationship between depressive symptoms and problematic alcohol and cannabis use. First, positive and negative urgency are implicated in depression (Berg et al., 2015; Carver et al., 2013; Marmorstein, 2013). Importantly, in a longitudinal study, urgency (i.e., the higher order construct of urgency traits) at elementary school predicted higher levels of depressive symptoms 12 months later (Smith et al., 2013), suggesting that urgency is a risk factor for the development of or increase in depressive symptoms over time. Second, negative and positive urgency are implicated in both alcohol and cannabis use, but do show some

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specific patterns across use subtypes (Coskunpinar et al., 2013; VanderVeen et al., 2016): Both urgency traits are related to problematic alcohol use, but not frequency of use (Coskunpinar et al., 2013); both urgency traits are related to cannabis use, only positive urgency is related to problematic cannabis use (VanderVeen et al., 2016). Also, depression is more strongly related to heavy alcohol and cannabis use, than light use (Alati et al., 2005; Lev-Ran et al., 2014).

Despite these findings, the research examining the interrelationship among urgency traits, depression, and alcohol and cannabis use is relatively small. Research in young adults and adolescents indicates that negative urgency plays a mechanistic role in explaining the relationship between depressive symptoms and alcohol use, such that higher depressive symptoms are related to higher negative urgency, which in turn, is related to greater alcohol use (Gonzalez et al., 2011; Pang et al., 2014). One study failed to replicate this with cannabis use (Pang et al., 2014). Research in young adults also suggests that positive urgency may moderate the relationship between depressive symptoms and alcohol use, such that depressive symptoms are associated with negative alcohol-related consequences in individuals with higher positive urgency, but not in those with lower positive urgency (Karyadi and King, 2011).

Together, though these constructs appear to be interrelated, there are significant gaps that we address. First, it is important to include both negative and positive urgency simultaneously in these models. Negative and positive urgency are highly intercorrelated (r's ~ 0.5–0.8 across studies); models only including one or the other fail to account for the general effect of urgency and lack specificity with regards to valence (i.e., positive or negative emotions), which might explain inconsistencies in the literature. Second, there is a great need to examine the generalizability of these relationships among the general population. The majority of research has been conducted in adolescents and young adults; the findings might not generalize to older, more heterogeneous adult samples (Argyriou et al., 2018). A recent measurement invariance study supported the validity of examining urgency across the adult lifespan, making it possible to examine negative and positive urgency in adults with a wide age range (Argyriou et al., under review).

In the current study, we test a series of competing, although not mutually exclusive, mediation and moderation models suggested by theory and previous empirical data to better understand the relationship among urgency, depressive symptoms, and problematic alcohol and cannabis use. First, we test concurrent mediation models in which positive and negative urgency are mediators of the relationship between depressive symptoms and alcohol or cannabis use (as supported by Gonzalez et al., 2011; Pang et al., 2014). Although personality traits, such as urgency, are thought to be more stable attributes, they do change across the lifespan (Argyriou et al., 2018; Littlefield et al., 2016, 2009) and have been shown to change in response to depressive symptoms (Riley et al., 2016). Given that depressive symptoms are often experienced repeatedly throughout life, the idea that one's personality changes in response to this, explaining the relationship between such symptoms and alcohol and cannabis use, is viable (Littlefield et al., 2016, 2012, 2009). Second, we test moderation models examining negative and positive urgency as moderators of the relationship between depressive symptoms and problematic alcohol and cannabis use (as supported by Karyadi and King, 2011). This model is also viable – urgency traits are theorized to influence risk-taking behaviors, such as alcohol and cannabis use, under extreme emotional states. Previous literature suggests that individuals with depression experience more daily negative emotions and are more reactive to pleasant events in their daily life (Bylsma et al., 2011; Peeters et al., 2003), which provides an ideal context in which negative and positive urgency to operate. It may be that depressive symptoms are more strongly tied to alcohol and cannabis use among those high in urgency traits.

We examine these models in a large community-based sample of adults aged 18–71 in order to characterize these relationships in the general population using path analyses in structural equation modeling (SEM). Examining both mediation and moderation models enables the differentiation of important pathways in which urgency plays distinct roles in imparting risk for problematic alcohol and cannabis use. We test the effect of one urgency trait, while accounting for the other urgency trait, due to the high shared variance between them and in order to provide more specificity in these model patterns.

2. Materials and methods

2.1. Data

The de-identified data were extracted from the publicly available, large-scale community sample from the Rockland County, NY collected through the Rockland Project by the Nathan Kline Institute (Nooner et al., 2012). The community sample closely resembled U.S. demographics and therefore, exclusion criteria were minimal to maximize representativeness. Any individual who was willing to participate within the age range (between 6 and 85) was enrolled in the study (i.e., there were no other inclusion or exclusion criteria), and recruitment bias was controlled with zip code-based recruitment with efforts to avoid over-representation of any community to match the representation of Rockland County that resembles U.S. demographics. The Institutional Review Board at the Nathan Kline Institute and Montclair State University approved the study and informed consent was obtained from participants; the current analysis was exempt from human subject review.

2.2. Participants

Our sample included 675 participants who were 18 years or older (mean age = 42.57 years, SD = 15.66; 65.0% female; 74.2% White; see Table 1). All participants included completed measures used in this study as a part of Rockland Project protocol. We included all individuals from the Rockland data who were 18 years old or older and who completed measures of key constructs (i.e., depressive symptoms, urgency traits, and problematic alcohol and cannabis use).

2.3. Measures

2.3.1. UPPS-P Impulsive Behavior Scale (UPPS-P; Lynam et al., 2006)

The UPPS-P is a 59-item self-report assessment of five distinctive impulsive personality traits. Only negative and positive urgency subscales were used in this study. Responses range from 1 (agree strongly) to 4 (disagree strongly). Items were reverse scored and means were calculated per scoring instructions so that higher scores indicate higher urgency. Both negative urgency (Cronbach's α = 0.87) and positive urgency (Cronbach's α = 0.91) showed excellent reliability in the current sample.

2.3.2. Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996)

BDI-II is a 21-item self-report questionnaire assessing depressive symptoms. Responses range from 0 to 3 and higher total scores indicate greater depressive symptoms. The reliability of BDI-II in the current sample was excellent (Cronbach's α = 0.91). Depressive symptoms (a continuous variable) was chosen rather than a dichotomous diagnosis (yes/no depression) to increase variability and thus increase predictive power.

2.3.3. Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST; Heslop, Ross, Osmond, & Wynaden, 2010)

The ASSIST is a screening measure for problematic substance use developed by the World Health Organization. A set of 8 items assesses problematic substance use (tobacco, alcohol, cannabis, cocaine, stimulants, sedatives and sleeping pills, hallucinogens, inhalants, opioids and other drugs). The first item assesses lifetime use of a given drug. If