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Negative Urgency Predicts Maladaptive Coping Strategies

An Honors Thesis submitted in partial fulfillment
of the requirements for Honors Studies in
Psychology

By

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Psychology

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Abstract

Negative urgency is defined as the disposition to act rashly when under distress. This personality subtype is strongly tied to problematic alcohol and substance use, self-harming behaviors, and binge eating following a distressful period (Cyders et al., 2013; Fischer et al., 2004). The current study hypothesized that participants (62.07% Female, $M = 19.81$, $SD = 4.16$, 73.28% White, 6.90% Hispanic, 6.90% African American, 3.45% Native American/Alaskan Native, 3.45% Asian American, 3.45% Middle Eastern, 1.72% Other) who scored high in negative urgency would endorse more maladaptive coping strategies after a negative mood induction ($n = 57$), compared to a neutral mood induction ($n = 59$). Specifically, analyses examined differences in endorsement of alcohol, marijuana, and self-harm and binge eating cravings between conditions. Results from a series of simple linear regressions offered no support for the hypothesis. The endorsement of alcohol, marijuana, self-harming, and binge eating cravings did not significantly differ between conditions. These results suggest maladaptive cravings are more nuanced in high negative urgency populations. More research is needed to further explore the potentially important relationship between negative urgency and desire to utilize maladaptive coping methods.

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Negative Urgency Predicts Maladaptive Coping Strategies

Overview

According to Whiteside and Lynam (2001), impulsivity is a personality characteristic that relates strongly to many facets of personality broadly. And while the conceptualization of impulsivity has been known for some time (see Eysenck and Eysenck, 1985), recent studies have changed the conceptualization of impulsivity significantly. In a structural model assessing impulsivity, Whiteside and Lynam (2001) narrowed the operationalization of impulsivity from several different impulsivity measures and linked its conceptual roots to negative personality characteristics such as neuroticism. Further research suggests impulsivity as a precursor to acting erratically when subjected to negative affect (Jackson, 1984; Wallace et al., 1991). This inclination to act rashly is driven by distinct mood-states, underpinned by an impulsive personality and a lack of premeditation (Cyders and Smith, 2007; Cyders and Smith, 2008; Whiteside and Lynam, 2001). Negative urgency (NU) is a sub-classification of the personality trait impulsivity and refers to the inclination to act recklessly while under distress (Fischer et al., 2004; Kaiser et al., 2012). Thus, a sub-category of impulsivity, NU, has been suggested as a main component driving desires for maladaptive coping behaviors when distressed (Cyders and Smith, 2007; Kaiser et al., 2012; Owens et al., 2018).

Previous literature suggests that high-NU individuals are likely to feel more inclined to engage in maladaptive, addictive, coping measures when experiencing a negative mood (Cyders et al., 2015; Cyders and Smith, 2008; VanderVeen et al., 2016; Zorrilla and Koob, 2019). Such actions could include substance abuse or other behavioral coping methods such as self-harm or binge episodes (Fischer et al., 2004). Importantly,

neurobiological research has related NU to high levels of poor inhibitory control and high levels of craving; thus, high-NU individuals are neurologically more susceptible to an alcohol cue, as seen in amygdala activation (Zorrilla and Koob, 2019). Further evidence for a theoretical link between urgency and maladaptive coping behaviors are discussed below.

Negative Urgency

Reed and Derryberry (2005) found that prominent clinical measures of impulsivity largely revolved around *sensation seeking, lack of planning, lack of perseverance, and urgency*. The latter referring to a disposition to behave rashly when subjected to a distressful period or event (Cyders and Smith, 2007). Urgency is reflected in both domains of positive urgency (PU), and negative urgency (NU). PU refers to an inclination to act rashly when subjected to a positive mood, whereas NU is a reaction to negative distress (Cyders and Smith, 2007; Lynam et al., 2006). For example, PU is seen in individuals who consume alcohol, or other substances, to enhance or prolong a positive mood, such as a celebration, potentially leading to a cycle of problematic behaviors (Cyders and Smith, 2008). Moreover, both positive and negative urgency predicts lower levels of conscientiousness, specifically in effortful planning, even though they are distinct constructs (Cyders and Smith, 2007; Cyders and Smith, 2008; Lynam et al., 2006). While some conceptual overlap is seen between these constructs, negative and positive urgency stem only from their respective mood-states (Cyders and Smith, 2007; Cyders and Smith, 2008).

Along with a significant deficit seen in planning and premeditation, individuals high in NU are at heightened risk for endorsing problematic strategies while coping with

negative situations and negative affect. Experimental research from Kaiser et al. (2012) has demonstrated a significant relationship between NU and substance use outcomes. High levels of NU predicted alcohol and alcohol-use problems more so than any other variable. Furthermore, NU predicted alcohol consumption, hard drug use, and tobacco use when faced with a distressful situation (Kaiser et al., 2012). The body of literature demonstrates the connection between NU and maladaptive coping strategies, such as problematic drinking, risky sexual behavior, gambling, binge eating, and illegal drug use (Fischer et al., 2004; Kaiser et al., 2012; Settles et al., 2012; Smith and Cyders, 2016). Interestingly, research on NU in a college-age sample suggested college student's impulsive actions could involve more substance use than the general population, because these items are typically readily available (Kaiser et al., 2012). The current study also investigated the role substance use plays in high-NU college-age participants.

Coping Strategies

Research on NU has led to valuable insights about the perception of negative emotional states. Critical to understanding NU is identifying the behavioral responses following distressful periods (Kaiser et al., 2012). These maladaptive coping strategies linked to NU are expressed through physical actions, such as problematic drinking (Fischer et al., 2012). Moreover, extensive research on coping strategies have utilized three broad categories of coping: problem-focused, emotion-focused, and avoidance (Britton et al., 2004; Carver et al., 1989). Research on maladaptive coping strategies has focused specifically on avoidance coping which is the process whereby an individual avoids thinking about negative stimuli (e.g., thought suppression) (Britton et al., 2004). Avoidance approaches do not bring an individual a resolution to the underlying issue.

Previous research suggests avoidance coping produces poor outcomes because the negative stimulus remains unattended-to (Britton et al., 2004). Research from Lazarus (1966) suggests alcohol and substance use are frequently attributed to avoidance coping. Conceptual overlap is found with NU regarding problematic substance use, insofar as both avoidance coping measures and NU fast-track immediate relief to negative affect (King et al., 2018). In a recent meta-analysis, Coskunpinar et al. (2013) found NU to be the strongest indicator of alcohol use and alcohol-related problems, compared to sensation seeking, lack of planning, and lack of perseverance.

Moreover, previous research has linked avoidance coping to poor utilization of adaptive coping skills (i.e., problem or emotion- focused) and low emotional intelligence (Britton et al., 2004; Riley and Schutte, 2003). In recent experimental research, Manjrekar et al. (2015) suggested low emotional awareness as moderating the association between binge eating and urgency. Likewise, prior research suggests low emotional intelligence as the greatest predictor of maladaptive coping strategies, such as drinking alcohol or using substances rather than generating reappraisals for their situation (Riley and Schutte, 2003). King et al. (2018) also suggested high-NU participants were significantly more likely to utilize avoidance coping measures when faced with a distressful situation. Likewise, research from VanderVeen et al. (2016) suggests NU augmented alcohol consumption when participants were put in a distressed mood. Although previous research has looked at NU and the aspiration to use maladaptive coping strategies while under distress; few studies have examined the relationship of maladaptive coping desires over multiple mood states in individuals who score high in negative urgency.

The present study

The present research investigated the relationship between negative urgency and desires to use maladaptive coping strategies. Experimental research concerning NU and coping strategies is increasingly important because retrospective measurements of this construct may not capture the momentary nature of impulsivity in response to affect (Owens et al., 2018). Previous research has linked negative urgency to problematic drinking and illegal drug use (Fischer et al., 2004; Kaiser et al., 2012; Settles et al., 2012; Smith and Cyders, 2016). Alcohol craving has also been linked to individuals high in negative urgency when distressed (Smith and Cyders, 2016; Cyders et al., 2013). This research project aimed to further these findings by investigating the conditions in which individuals high in NU experience maladaptive coping desires beyond strictly substance use. Specifically, this study was designed to build on the current literature by examining pervasive maladaptive desires across neutral and negative mood states; furthermore, I was interested in understanding when individuals high in NU experience the desire to use maladaptive coping strategies. The current study aimed to test a single hypothesis: High-NU individuals who undergo a negative mood induction will endorse a greater number of maladaptive coping strategies (i.e., alcohol craving, marijuana craving, and self-harm and binge eating cravings), compared to high-NU individuals who undergo a neutral mood induction.

Method

Participants

Data were collected from 133 participants; however, 15 responses were omitted from analyses due to incomplete measures or indicating they did not devote their full attention to the study. Another two responses were removed due to their reported Self-Harm and Eating Behaviors Scale (SHEBS) score being 2 standard deviations from the mean. The final sample used in analyses included 116 university undergraduate students (62.07% Female, $M = 19.81$, $SD = 4.16$, 73.28% White, 6.90% Hispanic, 6.90% African American, 3.45% Native American/Alaskan Native, 3.45% Asian American, 3.45% Middle Eastern, 1.72% Other), ages 18 and older, who scored in the upper-quartile in negative urgency. Participants were recruited from general psychology courses via email or the university research participation portal, SONA. Four items assessing NU traits were included in the general SONA department pre-screener, distributed to all general psychology students. Those who qualified, based on a NU score of 11 or higher were invited to participate in the study. To determine the SUPPS cutoff score, the researchers used a sample of scores collected from University of Arkansas psychology students ($N = 599$) to determine a cutoff score of 11, which was 0.50 SD above the mean NU score for this sample (Owens et al., 2018).

Procedure

Potential participants were sent available time-slots via email or signed up through SONA systems to complete the study online, independently. Upon entering the study, participants were provided with an electronic informed consent (see Appendix A). After clicking a button indicating consent, participants completed demographic and background information (gender, ethnicity, employment status, marital status, sexual orientation, etc.) and baseline measures including the Alcohol Use Disorders

Identification Test (AUDIT), the Drug Use Disorders Identification Test (DUDIT), the Brief Resilience Coping Scale (BRCS) and the Short-form version of the Urgency, Premeditation (lack of), Perseverance (lack of), Sensation Seeking, Positive Urgency Impulsive Behavior Scale (SUPPS). Subsequently, participants ranked their baseline mood using the Affect Grid. Immediately following a current mood assessment, participants were randomly assigned to either a negative ($n = 57$) or neutral ($n = 59$) mood induction utilizing the Music and Contemplation in Idiographic context (MCI; Eich et al., 2007). The MCI utilized an emotionally suggestive music track paired with a writing task to elicit a desired affective state in the participant (Zhang et al., 2014). Participants listened to Beethoven's *Sonata No. 7* (Vastfjall, 2002) in the negative mood condition, and Fripp's *Wind on Water* (Conklin and Perkins, 2005) in the neutral mood condition. For the negative condition, participants wrote about an extremely negative period in their life, such as a death, and in the neutral condition participants wrote about a neutral event, such as an uneventful car ride (see Appendix B). After a five-minute mood induction, participants were prompted to complete the Affect Grid a second time to ensure the mood induction was successful. The mood induction time limit was imposed because previous literature suggests laboratory mood inductions yield ineffective results after ten minutes (Frost & Green, 1982). The Alcohol Craving Questionnaire, Short Form – Revised (ACQ-SF-R), Marijuana Craving Scale, Short Form (MCQ-SF), and the Self-Harm and Eating Behaviors Scale (SHEBS) were administered post-manipulation to assess desires for maladaptive coping strategies. This research used items from the ACQ-SF-R and MCQ-SF's subscales *emotionality* and *compulsivity* to isolate emotions and affects associated with maladaptive coping strategies. Following the completion of all

measures, participants were shown a clip from Disney's *The Lion King* to elicit a positive mood (Marcusson-Clavertz et al., 2019); thus, lowering overall risk associated with the study. After the completion of all materials, participants were debriefed, given a comprehensive list of community mental health resources, and awarded credit for participation.

Measures

The Short-form version of the Urgency, Premeditation (lack of), Perseverance (lack of), Sensation Seeking, Positive Urgency Impulsive Behavior Scale (SUPPS; Cyders et al., 2014; Lynam et al., 2006). The SUPPS is a five section self-report questionnaire that assesses an individual's negative urgency, lack of perseverance, lack of premeditation, sensation seeking, and positive urgency (Cyders et al., 2014; Lynam et al., 2006). Responses in each section are coded using a four-point Likert-type scale, with responses being: 1 (*Agree Strongly*), 2 (*Agree Somewhat*), 3 (*Disagree Somewhat*), 4 (*Disagree strongly*). Scores for the SUPPS are collected by taking the total score from each subscale, then summing for a total. The four-item negative urgency subscale was used in this study to assess participants self-reported negative urgency and determine eligibility for the study. The SUPPS subscale of negative urgency has adequate reliability ($\alpha = 0.78$; Cyders et al., 2014).

The Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993). The AUDIT consists of 10 self-report questions aimed at examining problematic drinking behaviors, such as excessive alcohol consumption, hazardous alcohol consumption, and alcohol related problems (Saunders et al., 1993). AUDIT scores were used to assess

frequency of alcohol consumption and alcohol related problems. The AUDIT has good reliability ($\alpha = 0.86$; Saunders et al., 1993).

The Drug Use Disorders Identification Test (DUDIT; Berman et al., 2003). The DUDIT is an 11-item self-report questionnaire that assesses drug related problems and drug taking behavior (Berman et al., 2003). The total DUDIT score was used to assess frequency of drug use and drug related issues. Moreover, the DUDIT has good reliability ($\alpha = 0.80$; Berman et al., 2003).

The Brief Resilience Coping Scale (BRCS; Sinclair & Wallston, 2004). The BRCS is 9-item measure which assesses participant's ability to use adaptive coping skills when put under distress (Sinclair & Wallston, 2004). This measure rates responses on a scale from 1 (*the statement does not describe you at all*) to 5 (*the statement describes you very well*). Higher total scores on the BRCS indicate greater degrees of positive and affirming coping strategies. The BRCS was used to assess baseline adaptive coping skills. Moreover, the BRCS has good reliability ($\alpha = 0.86$; Sinclair & Wallston, 2004).

The Affect Grid (Russell et al., 1989). The Affect Grid is an instrument designed to assess momentary mood along a two-dimensional axis. The Affect Grid includes dimensions of pleasure-displeasure and arousal-sleepiness; the range of scores for each dimension is 1-9. The current study used the Affect Grid to measure changes in mood from pre- and post-mood induction; a successful mood induction was defined in this study as a change in affect by a shift of at least one grid box along the pleasure-displeasure dimension. The Affect Grid has moderate correlations with other momentary mood instruments ($r = 0.77$; Russell & Mehrabian, 1974; VanderVeen et al., 2016).

The Alcohol Craving Questionnaire, Short Form – Revised (ACQ-SF-R, Singleton, 1997). The ACQ-SF-R contains 12 items measuring participant's in-the-moment cravings for alcohol, with four subscales (compulsivity, expectancy, purposefulness, and emotionality; Singleton et al., 1994). The ACQ-SF-R was developed from the original Alcohol Craving Questionnaire (ACQ-NOW; Singleton et al., 1994) and correlates strongly with the ACQ-NOW; the ACQ-SF-R has good reliability among subscales ($\alpha = .79$, $\alpha = .77$, $\alpha = .77$, $\alpha = .86$, respectively; Singleton, 1997). Responses are coded using a four-point Likert-type scale ranging from 1 (*Strongly disagree*), 2 (*Disagree somewhat*), 3 (*Agree somewhat*), 4 (*Strongly agree*). Higher sum values indicate greater levels of craving behavior. Only items from the subscales compulsivity and emotionality were administered post mood induction. The ACQ-SF-R has good reliability ($\alpha = .85$; Martin et al).

The Marijuana Craving Scale, Short Form (MCQ-SF; Heishman et al., 2001). The MCQ-SF is a 12-item scale divided into four subsections (compulsivity, emotionality, expectancy, purposefulness) that assesses marijuana cravings in participants. The MCQ-SF was developed in accordance with the original 47-item Marijuana Craving Scale. Moreover, the MCQ-SF has adequate reliability among its subscales ($\alpha = .75$, $\alpha = .77$, $\alpha = .55$, $\alpha = .68$, respectively; Heishman et al., 2001). Responses are coded using a four-point Likert-type scale ranging from 1 (*Strongly disagree*), 2 (*Disagree somewhat*), 3 (*Agree somewhat*), 4 (*Strongly agree*). Higher sum values indicate greater levels of craving behavior. After the mood induction, items from the compulsivity and emotionality subscales were administered. The MCQ-SF displays good reliability ($\alpha = .85$; Martin et al., 2021).

The Self-Harm and Eating Behaviors Scale (SHEBS; Martin et al., 2021). The SHEBS is an 18-item scale aimed at assessing participants' cravings for inflicting self-harm and binge eating behaviors (see Appendix C). Both the self-harm and eating behavior subscales contain nine items; these sections of the SHEBS were created specifically for this study based on items from the ACQ-SF-R and MCQ-SF subscales regarding compulsivity and emotionality of craving behaviors. Responses are coded using a four-point Likert-type scale ranging from 1 (*Strongly disagree*), 2 (*Disagree somewhat*), 3 (*Agree somewhat*), 4 (*Strongly agree*). Higher sum values indicate greater levels of craving behavior concerning self-harm and binge eating. The SHEBS is an instrument developed by the principal researcher and has good reliability ($\alpha = .86$; Martin et al., 2021).

Results

Preliminary Analyses

To assess baseline levels of alcohol use and illegal substance consumption, the AUDIT and DUDIT were administered. There was a non-significant difference in AUDIT scores between the neutral induction group ($M = 3.09$, $SD = 3.97$) and the negative induction group ($M = 4.16$, $SD = 4.56$); $t(114) = -1.35$, $p = .179$. Similarly, results indicated a non-significant difference in DUDIT scores between the neutral induction ($M = .93$, $SD = 2.09$) and negative induction groups ($M = .91$, $SD = 2.63$); $t(114) = .048$, $p = .962$. These findings confirm that individual differences relating to substance use were evenly distributed between groups in the study. Moreover, a Pearson's product moment correlation was performed on all baseline and main variables (see Table 1). Chi-square and t-tests were also performed to examine group differences in

sample demographics and descriptive measures (see Tables 2 - 5); no groups differences were found.

To ensure a successful manipulation, a paired samples t-test was performed examining changes in reported Affect Grid valence scores for both negative and neutral conditions. There was a non-significant difference in valence scores pre-neutral mood induction ($M = 5.73$, $SD = 2.04$) to post neutral mood induction ($M = 6.25$, $SD = 1.91$); $t(58) = -1.78$, $p = .081$. However, there was a significant difference in valence scores pre-negative mood induction ($M = 6.17$, $SD = 2.11$) to post-negative mood induction ($M = 2.89$, $SD = 1.55$); $t(56) = 10.30$, $p < .001$. These findings indicate participants' mood significantly changed only with a negative mood induction, as predicted (see Figure 1).

Main Analyses

A series of simple linear regressions were performed to test the hypothesis that individuals in the negative mood condition would endorse more maladaptive coping strategies than individuals in the neutral condition. The first model predicting the dependent measure (ACQ-SF-R) from the manipulated mood induction condition indicated that the model was non-significant, $F(1, 114) = .0472$, $p = 0.493$, $R^2 = .004$. The model did not show that a mood induction predicted higher ACQ-SF-R scores, suggesting alcohol craving after the mood induction did not differ between groups. The second model predicting the dependent measure (MCQ-SF) from the manipulated mood induction condition indicated that the model was also non-significant, $F(1, 114) = .020$, $p = .887$, $R^2 < .001$. This model did not show that a mood induction predicted higher MCQ-SF scores, suggesting marijuana craving post mood induction did not differ between groups. The third model predicting the dependent variable (SHEBS) from the

manipulated mood induction condition indicated that the model was non-significant, $F(1, 114) = 1.950, p = .165, R^2 = .008$. The model did not indicate that a mood induction predicted higher SHEBS scores, suggesting self-harm and problematic eating cravings did not differ between groups after the mood induction. Taken together, these results suggest little support for the main hypothesis.

Secondary Analyses

Additional linear regressions were performed testing if individuals in the negative mood condition would endorse more items on the SHEBS' subscales of Self-harm (SHEBS-SH), and Eating Behaviors (SHEBS-EB), compared to the neutral mood condition. Because few participants endorsed any self-harm behaviors, the SHEBS-SH variable was dichotomized into two groups, individuals who endorsed no self-harm and those who endorsed any degree of self-harm. The model predicting SHEBS-SH from the manipulated mood induction condition indicated that the model was non-significant, $F(1, 114) = .041, p = .839, R^2 < .001$. This model did not suggest that a mood induction predicted higher SHEBS-SH scores, suggesting self-harm desires did not differ between groups following the mood induction. A second model predicting SHEBS-EB from the manipulated mood induction condition suggested that the model was also non-significant, $F(1, 114) = 3.937, p = .050, R^2 = .033$. The model did not indicate that a mood induction predicted higher SHEBS-EB scores, suggesting desires for problematic eating did not differ between groups after the mood induction. A final linear regression was performed testing if participant's baseline level of hunger predicted SHEBS-EB scores (see Table 6). The model predicting SHEBS-EB scores from level of hunger indicated that the model was significant, $F(1, 113) = 14.973, p < .001, R^2 = .109$. The model indicated that

self-reported level of hunger predicted higher SHEBS-EB scores, suggesting desires for problematic eating could have been skewed by baseline hunger levels (see Figure 2).

Discussion

This study hypothesized that high-NU participants would endorse a greater number of maladaptive coping strategies after an induction of negative mood, compared to high-NU participants who underwent a neutral mood induction. However, this hypothesis was not supported in the current study and the results indicated that these two groups did not differ on endorsement of alcohol craving, marijuana craving, or the desire to engage in other maladaptive coping strategies. Although the hypothesis was not supported in this study, the results still make an interesting contribution to the body of research on negative urgency. The study aimed to assess under what affective state high-NU participants would endorse problematic coping behaviors; results indicate these desires may be more nuanced than previously thought. The preliminary results demonstrated no significant difference in the distribution of participants, their self-reported NU score, or their endorsed maladaptive coping behaviors between conditions.

Previous studies have demonstrated a link between NU and poor coping mechanisms such as alcohol and drug consumption, self-harm behavior, gambling, risky sexual behavior, and binge eating episodes (Coskunpinar et al., 2013; Cyders et al., 2013; Cyders et al., 2015; Cyders and Smith, 2008; Smith and Cyders, 2016; VanderVeen et al., 2016; Zorrilla and Koob, 2019). Individuals high in NU favor coping strategies that provide immediate feedback and relief, but negatively impact their health over a long period of time (King et al., 2018). Interestingly, results from the current study found no variance in participant's endorsement of alcohol craving between conditions. Previous experimental research from VanderVeen et al. (2016) found that high-NU participants under a negative mood induction self-administered alcohol and increased intoxication

levels significantly quicker over a two-hour study session, compared to a neutral mood group. The study also utilized an explicit alcohol prime in their procedure (also see Treloar and McCarthy, 2012), subsequently administering alcohol intravenously to participants; the current study did not use an alcohol prime, nor provided alcohol to participants. These methodological differences could partially explain the lack of endorsement variance between conditions. However, the research from VanderVeen et al. (2016) was a laboratory-based experiment with a small sample size. More research is required to generalize these findings of affect-based craving in a high-NU population.

Important to NU is considering externalized and internalized reflexive action. These low-cognitive taxing actions, in response to negative distress, are either outwardly or inwardly expressed, respectively (King et al., 2018). High-NU individuals frequently utilize reflexive actions (or inaction) to face distressful emotions (King et al., 2018; Smith and Cyders, 2016). The current research offered no distinction between reflexive alcohol-based coping and reflexive internalized thought suppression. More research is required to separate the instances when externalizing and internalizing coping is utilized in high-NU participants. Moreover, research suggests high-NU individuals frequently utilize a concrete stimulus to focus on after experiencing distress (Fischer et al., 2003). The current study offered no physical medium for coping; lack of motivation towards externalized behaviors could potentially explain the current findings. In the negative condition, participants were not able to utilize externalized coping methods, such as alcohol consumption; therefore, participants could have engaged in reflexive internalized behaviors, such as self-blaming or thought avoidance (King et al., 2018). Bandura (1969) suggested individuals drink-to-cope with stress reactively, and the literature on

reactionary drinking-to-cope underscores the importance of alcohol availability, especially in a sample of college-age participants, who drink significantly more than non-college peers (Curcio and George, 2011). This warrants future research into specific alcoholic desires, such as alcohol expectancies (see Anthenien et al., 2017), and situations where high-NU individuals would be more likely to engage in reflexive internal or external mood alleviation.

Although substance and illegal drug use is commonly utilized following a negative event in high-NU individuals (Kaiser et al., 2012; Settles et al., 2012; Smith and Cyders, 2015; Zorrilla and Koob, 2019), the current sample reported low rates of drug use, as reported with DUDIT and MCQ-SF scores. Very few participants endorsed problematic substance use or substance use related issues. Furthermore, few participants endorsed high levels of craving for marijuana post-manipulation. These findings are surprising considering previous research which suggests college-age individuals are among the highest users of substances and illegal drugs (Substance Abuse and Mental Health Services Administration, 2007). Further, due to the COVID-19 virus, young adults have significantly increased substance use to cope with isolation and social-distancing mandates (Czeisler et al., 2020). As for the current research, one explanation of the results concerns participant demographics. Most of the current sample resided on a university campus, an area that is subject to strict regulations. Access to illegal drugs and substances could be curbed, an effect bolstered by the ongoing COVID-19 pandemic. More research is required in this area to understand substance use desires in high-NU individuals, specifically utilizing an experimental design to understand the affective changes associated with increased drug-use desires.

Beyond alcohol and substance use, this research sought to investigate externalized behaviors such as self-harm and problematic eating at the intersection of affective states. The results did not show support for negative-affect high-NU participants endorsing greater self-harm and binge eating tendencies; rather, endorsements between conditions varied non-significantly. Dir et al. (2013) suggested NU strongly, and independently, predicts self-harm, and comorbid behaviors such as problematic eating. One explanation of these findings highlights only a small percentage of participants endorsed self-harming behaviors in the current study. Interestingly, some estimates place self-harm prevalence as high as 35% in non-clinical populations (Dir et al., 2013; Gratz, 2006). Individuals who endorse self-harming tendencies also score high in measures of sensation seeking and lack of planning (Dir et al., 2013). Although related, NU, sensation seeking, and lack of premeditation and planning are distinct and separable constructs (Cyders et al., 2014). Participants might have endorsed low tendencies in other areas while self-reporting high levels of NU. This is plausible considering the SUPPS and SHEBS-SH were not significantly correlated; however, the SUPPS and SHEBS total score was significantly correlated. This further suggests the distinct and independent facets of an impulsive personality. More research is needed to investigate the pathways in which high-NU individuals utilize self-harm, an issue on which personality research could offer unique perspectives.

Related to self-harming behaviors is the association between NU and binge eating episodes; eating following a distressful period acts as a tangible stimulus that replaces negative affect (for a review, see Fischer et al., 2003). Disordered eating is significantly associated with a lack of self-control and expectations for alleviation of negative affect

from eating (Dir et al., 2013; Fischer et al., 2003). This study's results demonstrated a non-significant variance between conditions of high-NU participant's endorsement of binge eating behaviors. However, the results were trending toward a significant relationship. Thus, future research should utilize a fully-powered sample to investigate the relationship between NU and problematic eating. Important to note was the role baseline hunger played on the SHEBS-EB scores. The results indicated this baseline variable significantly predicted higher SHEBS-EB scores. Therefore, it is important for future research in this area to control for hunger levels in participants. For example, to mitigate extraneous variables, such as hunger, VanderVeen et al. (2016) provided a 500 kcal breakfast to participants before intravenously administering alcohol.

Limitations

The current study had several key limitations in its experimental approach. Namely, recruitment tactics did not meet the minimum goal of participant inclusion to be fully powered; in turn, this resulted in an underpowered sample for analyses. Moreover, due to the COVID-19 pandemic, the current study was adapted to fit remote delivery. Future research should replicate this study in an in-person laboratory setting, paying special attention to recruitment tactics with high-NU college-age participants. Likewise, this research would benefit from a laboratory setting where extraneous stimuli can be controlled. The COVID-19 virus could have also impacted the viability of obtaining substances. Individuals could face additional barriers to acquiring substances in a social-distanced environment; overall substance endorsement could also have been low due to lockdown and isolation measures. Further, data was collected from a non-diverse, and relatively high-income sample. It is reasonable to suggest colleges and universities attract

high-income families and students; these populations could have greater access to adaptive coping measures when faced with distressful periods. More research with diverse samples is required for further generalization.

Participant age was another important consideration. The only screening criteria in the current study included an age of at least 18 years old, and a SUPPS score of at least 11 (for a review, see Owens et al., 2018). The average participant was younger than 21 years of age, indicating most participants were under the legal drinking age. This presents a methodological challenge when examining controlled substance use, such as alcohol consumption. Although important to study NU in college-age participants, future research should sample participants of legal drinking age or with a minimum AUDIT or DUDIT score indicating some regular substance use. Research concerning NU and college-age adults is especially critical given how popular and culturally permissive alcohol indulgence is in college environments (Kaiser et al., 2012).

Lastly, as mentioned previously, future studies should distinguish between internal and external coping behaviors. It is possible that participants under the negative mood induction engaged in more maladaptive behaviors but did so via thought suppression or another internal avoidance mechanism. This study was potentially weakened by only focusing on the external maladaptive behaviors displayed by high-NU participants. Also important are the potentially harmful internal strategies high-NU individuals use. It is possible internalized reflexive responses encourage the outward expression of maladaptive coping (i.e., alcohol consumption, drug use, self-harm, binge eating), thus requiring additional research.

Conclusion

This research sought to examine under what affective state participants high in negative urgency desired to use maladaptive coping strategies. The hypothesis that participants under a negative mood induction would endorse a greater number of maladaptive tendencies, compared to participants under a neutral mood induction, was not supported by the data; however, much can be gleaned from these results. Future research should continue to examine whether high-NU individuals consider utilizing alcohol, illegal drugs, binge eating, and self-harming behaviors under solely negative states, or whether these tendencies transcend momentary affective conditions. Shedding light on this issue could benefit future researchers studying personality psychology, substance use outcomes, and the field of impulsive behaviors.

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Table 1

Preliminary analyses: Pearson's correlations

Variable		SUPPS	AUDIT	DUDIT	BRCs	ACQSFR	MCQSF	SHEBS	SHEBS-SH	SHEBS-EB
1. SUPPS	Pearson's r	—								
	p-value	—								
2. AUDIT	Pearson's r	0.405***	—							
	p-value	< .001	—							
3. DUDIT	Pearson's r	0.055	0.463***	—						
	p-value	0.556	< .001	—						
4. BRCs	Pearson's r	-0.092	-0.058	0.103	—					
	p-value	0.326	0.534	0.270	—					
5. ACQSFR	Pearson's r	0.435***	0.447***	0.269**	-0.065	—				
	p-value	< .001	< .001	0.004	0.490	—				
6. MCQSF	Pearson's r	0.178	0.366***	0.462***	0.165	0.447***	—			
	p-value	0.056	< .001	< .001	0.077	< .001	—			
7. SHEBS	Pearson's r	0.184*	0.195*	0.193*	-0.030	0.140	0.022	—		
	p-value	0.048	0.036	0.038	0.745	0.134	0.816	—		
8. SHEBS-SH	Pearson's r	0.108	0.095	0.223*	-0.185*	0.015	-0.061	0.565***	—	
	p-value	0.250	0.309	0.016	0.047	0.872	0.512	< .001	—	
9. SHEBS-EB	Pearson's r	0.153	0.149	0.086	0.020	0.126	0.041	0.885***	0.211*	—
	p-value	0.102	0.109	0.360	0.834	0.177	0.663	< .001	0.023	—

* p < .05, ** p < .01, *** p < .001

Table 2

Age: Chi-Squared Tests

	Value	df	p
X ²	9.941	8	0.269
N	116		

Table 3*Gender: Chi-Squared Tests*

	Value	df	p
X ²	1.921	1	0.166
N	116		

Table 4*Ethnicity: Chi-Squared Tests*

	Value	df	p
X ²	6.479	7	0.485
N	116		

Table 5*SUPPS: Chi-Squared Tests*

	Value	df	p
X ²	41.392	29	0.064
N	116		

Table 6

Model Summary - SHEBS-EB

Model	R	R ²	Adjusted R ²	RMSE	Durbin-Watson		
					Autocorrelation	Statistic	p
H ₀	0.000	0.000	0.000	4.973	-0.056	2.109	0.557
H ₁	0.342	0.117	0.109	4.694	-0.068	2.123	0.516

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
H ₁	Regression	329.922	1	329.922	14.973	< .001
	Residual	2489.870	113	22.034		
	Total	2819.791	114			

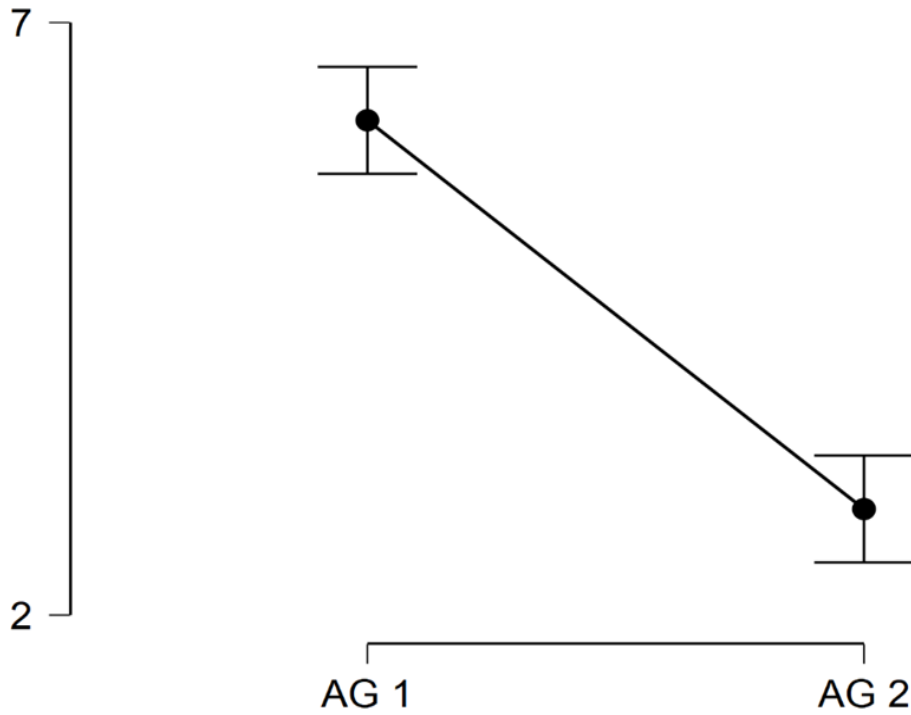
Note. The intercept model is omitted, as no meaningful information can be shown.

Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
H ₀	(Intercept)	12.191	0.464		26.287	< .001
H ₁	(Intercept)	9.700	0.779		12.459	< .001
	Hunger	0.677	0.175	0.342	3.870	< .001

Figure 1

Negative mood induction efficacy

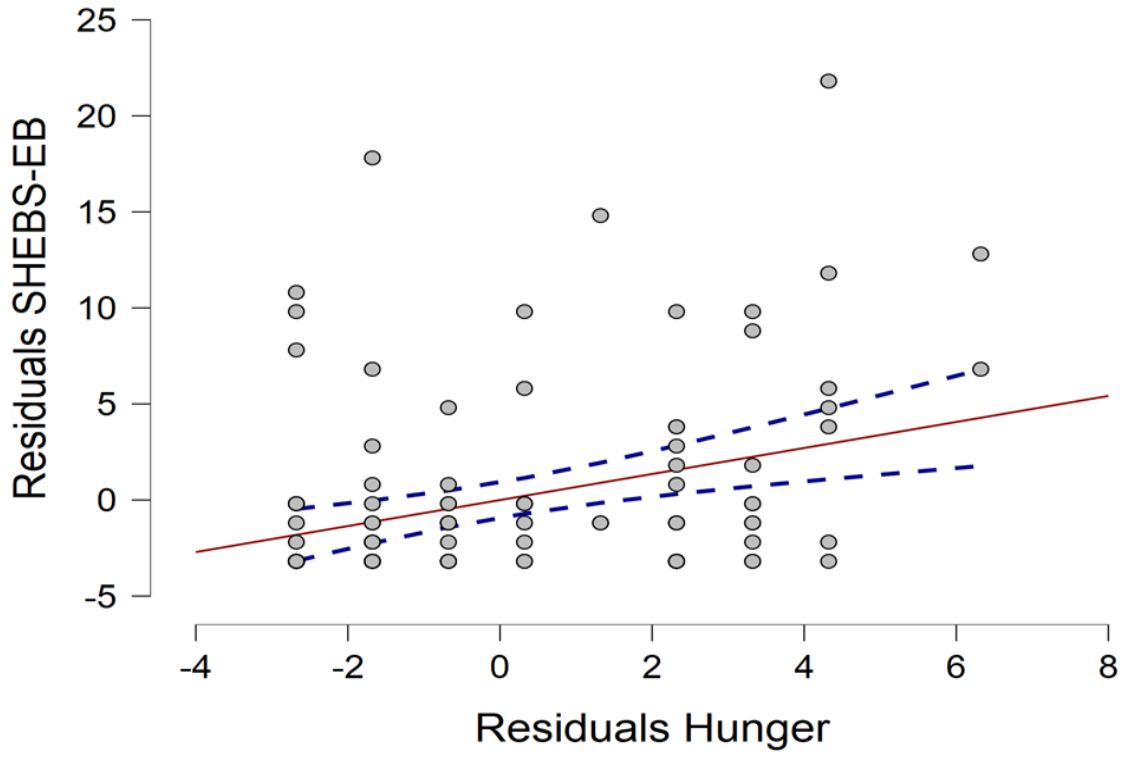


Note: AG 1 refers to pre-mood induction affect, AG 2 refers to post-mood induction affect.

^a Lower numbers on the y-axis indicate more negative pleasure-displeasure valence scores.

Figure 2

SHEBS-EB Standardized Residuals



Appendix A

Informed Consent

Title: Memory, Music, and Behaviors Study

Principle Researcher:

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Description: In this study, we will investigate how music and memory are related to your attitudes, beliefs, and feelings. This study will be completed online and is expected to take approximately 30 - 45 minutes. You will be asked to complete several self-report measures, listen to music, type about a past memory, and watch a brief film clip. **You must be at least 18 years of age or older to participate.**

Risks: Although there are no known risks for completing this study, the sensitive nature of the topic may cause participants to become uncomfortable. We will provide mental health resources to participants to ensure that they are able to receive services if they experience any distress related to the questions asked.

Benefits: Participants can benefit from this study by receiving 1 SONA research credit towards their course requirements. Additionally, information collected will help researchers understand more on memory, music, and certain behaviors.

Voluntary Participation: Your participation in this research is completely voluntary. You are not required to participate in this study or any other. Your future relations with the investigators of this study or the University of Arkansas will not be affected by your

decision, whether or not you wish to participate in this study. If you are participating in order to obtain research or class credit, please note that there are other options besides this study to earn the same credit.

Right to Discontinue Participation: If at any point during the course of the study you feel uncomfortable and do not wish to continue, you are free to discontinue participation without penalty. Additionally, your participation in this study is anonymous, therefore it will not be possible to withdraw your survey answers from the study after you have submitted the survey.

Confidentiality: Please keep in mind that your responses will be anonymous. Your name will not be associated with any of your responses, and your responses will be stored anonymously by the online survey software. All information will be kept confidential to the extent allowed by applicable State and Federal law and University policy. However, our SONA system is set up in such a way that **your name will not be linked to your responses on our survey**. All data will be stored in a password protected computer in a locked laboratory office and will be recorded anonymously used coded subject numbers. Names will not be recorded by the researcher. Your research records will be kept for five years after the study is closed and then destroyed. Any scientific reports or other applications of the results of the study will include no individual identifying information.

Questions: You have the right to contact the Principal Researcher or the University of Arkansas Research Compliance office as listed above for any concerns that you may have.

Informed Consent: By clicking the button below, I am indicating that I have read this form and understand its contents. I have had a chance to ask any questions, and my questions were answered to my satisfaction and that I agree to participate in this study.

Appendix B

Music and Contemplation in Idiographic context (MCI)

Negative mood induction

For this task, I would like to ask you to write about something very bad that has happened to you. You will write about this situation by typing in the empty box on the next page. Imagine vividly a situation from your life that has put you in an extremely bad mood. Try to re-experience the original perceptions, sensation, and feelings that you experienced during this bad mood. Try to take yourself back to when you experienced this very bad time and attempt to recreate the feelings and thoughts that you had at the time.

For example, you could write about a fight with a friend, a death in the family, or a personal illness. Just write about something that has happened to you that made you feel very bad. Write about your thoughts at the time and your feelings at the time. Once again, try to put yourself back in the frame of mind you were in when this event occurred.

Please type until you are taken to the next page. Please begin writing when you hear the music start and continue to do so until you are taken to the next page. Remember: continue to really experience this bad mood while writing.

Neutral Mood Induction

For this task, I would like to ask you to write about something neutral that has happened to you. You will write about this situation by typing in the empty box on the next page. Imagine a neutral situation from your life that did not strongly influence your mood. Try to re-experience the original perceptions, sensation, and feelings that you

experienced during this time. Try to take yourself back to when you experienced this neutral time and attempt to recreate the feelings and thoughts that you had at the time.

For example, you could write about a walk you went on, an uneventful car trip, a casual conversation, or the events of your typical day. Just write about something that has happened to you that did not strongly impact your mood. Write about your thoughts at the time and your feelings at the time. Once again, try to put yourself back in the frame of mind you were in when this event occurred.

Please type until you are taken to the next page. Please begin writing when you hear the music start and continue to do so until you are taken to the next page. Remember: continue to experience this neutral mood while writing.

Appendix C

The Self-Harm and Eating Behaviors Scale (SHEBS)

1. I would feel less jittery if I hurt myself right now.
2. I would feel more in control of things right now if I could hurt myself.
3. I could not stop myself from hurting myself if I had the chance right now.
4. I want to hurt myself so bad I can almost feel it.
5. I would feel less irritable if I hurt myself right now.
6. I am thinking of ways to hurt myself.
7. If I hurt myself right now, I would feel less tense.
8. I would feel less restless if I hurt myself now.
9. If I were to hurt myself now, I would feel less nervous.
10. I could not easily limit my consumption of food right now.
11. I would not be able to control how much food I consumed if I had some here.
12. I need to eat right now, despite how hungry I feel.
13. I would feel more in control of things right now I could eat food.
14. If I ate food right now, I would feel less tense.
15. I would feel less anxious if I ate food right now.
16. My desire to eat seems overpowering.
17. All I want to do right now is eat.
18. If I could eat right now, I would feel less restless.