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BRIEF REPORT

Neuroticism and Negative Urgency in Problematic Alcohol Use: A Pilot Study

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ABSTRACT

Background: Problematic alcohol use is common among university students and personality might account for individual differences in developing this maladaptive behavior. Two personality dispositions implicated in problematic alcohol use are negative urgency and neuroticism. However, the relationship of these traits to problematic alcohol use is unclear. In college students high neuroticism is not directly linked to problematic alcohol use. On the other hand, the experience of emotional distress in people high in neuroticism could impair the capacity for impulse control. Loss of impulse control under conditions of negative affect could trigger impulsive drinking and problematic alcohol use in the long run. *Objectives:* We investigated this idea by testing whether negative urgency mediates the relationship of neuroticism to problematic alcohol use. *Methods:* Participants were 60 undergraduate university students who completed the Urgency subscale of the Urgency, (lack of) Premeditation, (lack of) Perseverance, Sensation Seeking, and Positive Urgency Impulsive Behaviour scale (UPPS-P), the Alcohol Use Disorders Identification Test (AUDIT), and the Neuroticism subscale of the Eysenck Personality Questionnaire Revised short form (EPQ-RSS). *Results:* The results confirmed our hypothesis as we found an indirect effect of negative urgency on the relationship between neuroticism and problematic alcohol use. *Conclusions/Importance:* It appears that it is not distress but the tendency to act rashly when distressed that is important in developing problematic alcohol drinking in university students.

KEYWORDS

Problematic alcohol use; neuroticism; negative urgency; university students

Problematic alcohol use among university students is a serious public health concern worldwide (Cyders, Flory, Rainer, & Smith, 2008; van de Luitgaarden, Thush, Wiers, Knibbe, 2008). However, not all university students develop problematic alcohol drinking. Personality factors may account for individual differences in problematic alcohol use and both neuroticism and negative urgency are strong candidates (Cyders & Smith, 2008).

Negative urgency, the tendency to act impulsively when distressed (Whiteside & Lynam, 2001), has been associated with problematic alcohol use in college students and older adolescents. Although Cyders et al. (2008) reported that negative urgency does not predict problematic alcohol use, findings from other studies demonstrate that negative urgency is a unique predictor of problematic alcohol use in United States (US) college students (Adams, Kaiser, Lynam, Charnigo, & Milich, 2012; Dir, Karyadi, & Cyders, 2013). Similarly, in a recent meta-analytic review it was found that negative urgency is associated with problematic alcohol use in adolescents aged 18 and older (Stautz & Cooper, 2013).

Neuroticism refers to the predisposition to experience intense emotional distress (Jacobs, van Os, Derom, Thiery, Delespaul, & Wichers, 2010). Higher neuroticism

is often linked to alcohol disorders but its relationship to subclinical drinking is not clear. Hussong (2003) found no direct relationship of neuroticism to problematic alcohol use but only an indirect positive link via coping motives. US college students high in neuroticism drink to cope with negative affect, which leads to problematic alcohol use. Similarly, Kuntsche, von Fischer, and Gmel (2008) reported a direct negative effect of neuroticism on risky drinking but also an indirect positive link via coping motives in Swiss university students.

The relationship of neuroticism and negative urgency to problematic alcohol use has not been fully investigated yet. This is unfortunate because the identification of modifiable risk factors for problematic alcohol use in university students could contribute to the prevention of the problem. Negative urgency could mediate the effect of neuroticism on problematic alcohol use. Muraven and Baumeister (2000) argue that self-control is a limited resource system and self-control acts reduce the amount of the resource available for subsequent self-control attempts. Emotionally distressed people attempt to regulate their negative affect but affect regulation depletes self-control resources, leading to impulsive behavior. Alternatively, Tice, Bratslavsky, and

Baumeister (2001) argue that emotionally upset people strategically shift their priorities from impulse control to affect regulation to make themselves feel better. Whatever the mechanism, emotional distress could lead to impulse control dysregulation (Tice et al., 2001) and this could be especially true for people high in neuroticism who are prone to emotional distress. However, dysregulation of impulse control when distressed is the definition of negative urgency (Whiteside & Lynam, 2001). Thus, impulsive behavior as a result of negative affect regulation could lead to problematic alcohol use in people high in neuroticism. This hypothesis has never been investigated in the alcohol literature.

The present pilot study aims to investigate this idea in a small sample of European university students. We expected that negative urgency mediates the effects of neuroticism on problematic alcohol use.

Methods

Participants

Participants were 60 university undergraduate second-year psychology students (43 females, 17 males; mean age = 21.12 years, $SD = 1.45$, $min = 19$, $max = 26$). All participants were alcohol drinkers and did not abstain from alcohol. The sample consisted of 24 Dutch, 34 German, 1 Belgian, and 1 French students. Participants were awarded with half a course credit for their participation.

Measures

Urgency, (lack of) Premeditation, (lack of) Perseverance, Sensation Seeking, and Positive Urgency (UPPS-P) Impulsive Behaviour scale

The UPPS-P scale assesses negative and positive urgency, (lack of) premeditation, (lack of) perseverance, and sensation seeking (Cyders et al., 2008). In the present study, only the 12 items of the negative urgency subscale were used. The Cronbach's alpha coefficient for the negative urgency subscale was .85.

Eysenck Personality Questionnaire Revised Short Form (EPQ-RSS)

The EPQ-RSS measures psychoticism, extraversion, and neuroticism (Sanderman, Arrindell, Ranchor, Eysenck, & Eysenck, 1995). In the current study, only the 12 items regarding neuroticism were used. The Cronbach's alpha coefficient was .76.

Alcohol Use Disorders Identification Test (AUDIT)

Problematic alcohol use was assessed with the AUDIT (Saunders, Aasland, Babor, De la Fuente, & Grant, 1993).

It consists of ten items and total scores of eight or more indicate problematic alcohol use (Babor, Higgins-Biddle, Saunders, & Monteiro, 1993). The Cronbach's alpha coefficient was .77.

Procedure

Participants were recruited via online advertisement at Maastricht University. After signing the informed consent form, participants were administered the negative urgency and neuroticism subscales and the AUDIT in a counterbalanced order. After the study was completed, participants were debriefed via e-mail.

Statistical analysis

Mediation analysis was performed using the bootstrapping method to test whether negative urgency mediates the effects of neuroticism on problematic alcohol use. The 95% accelerated bias-corrected confidence interval (CI) of the indirect effect was obtained with 5000 bootstrap resamples. CIs that do not contain zero are interpreted as significant (Preacher and Hayes, 2008).

Results

General characteristics

Men and women did not differ in AUDIT scores, $t(58) = 1.72$, (ns). Table 1 displays the means (M), standard deviations (SD), min and max scores, and the bivariate correlations for the three measures of interest in the present study.

Mediation analysis

Although the bivariate correlation between neuroticism and AUDIT was non-significant, a test of mediation was performed using the indirect effects method (MacKinnon, Fairchild, & Fritz, 2007). The assumption that

Table 1. Descriptive statistics and bivariate correlations between AUDIT, neuroticism, and negative urgency scores in second-year university students.

N = 60	M	SD	Min	Max	Bivariate correlations		
					AUDIT	Neuroticism	Negative urgency
AUDIT	9.73	4.99	1	20	–	.09	.46*
Neuroticism (EPQ-RSS)	5.07	2.97	0	12		–	.51 [†]
Negative Urgency (UPPS-P) [†]	2.29	0.49	1.25	3.67	.46*	.51*	–

[†] Negative Urgency scores are per item means;

* Correlations are significant at $p < .001$.

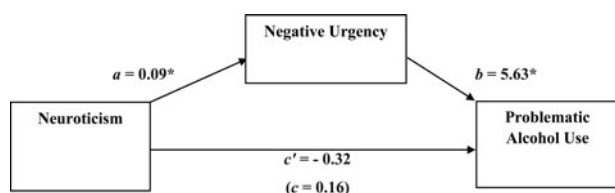


Figure 1. Mediation model of the indirect effect of neuroticism on problematic alcohol use via negative urgency. * $p < .001$.

a statistically significant relation between the independent variable and the criterion is essential in mediation analysis reduces power to detect mediation effects as it ignores opposing indirect effects that cancel each other out (MacKinnon et al., 2007). For this reason, it is recommended to test for an indirect effect by examining whether the independent variable predicts significantly the mediator (a path) and the mediator in turn predicts significantly the criterion (b path) after controlling for the independent variable. The bootstrapped indirect effect was .48 (ab path), and the 95% confidence interval ranged from 0.19 to 0.87. Thus, the relationship between neuroticism and problematic alcohol drinking was significantly mediated by negative urgency (Figure 1). Neuroticism explained 26.1% of the variance in negative urgency (a path) and negative urgency explained 21.1% of the variance in AUDIT after controlling for neuroticism (b path). Figure 1 displays the unstandardized regression coefficients of the mediation analysis.

Discussion

The findings support our hypothesis that neuroticism predicts problematic alcohol use in university students indirectly via negative urgency. Intense negative affect may disrupt self-control either by depleting self-control resources or by making people abandoning impulse control attempts (Tice and al., 2001). Disruption of self-control as a result of affect regulation could lead to problematic alcohol drinking. Finally, the lack of a significant direct relationship between neuroticism and problematic alcohol use suggests that there are other indirect effects working in opposite directions that result in an overall non-significant relationship.

The present results might have implications for prevention programs in young educated social drinkers. Tolerating distress without acting rashly and teaching adaptive responses to intense negative affect could be useful skills for these people. The goal should be to return to an optimal emotional state where people could act while having their long-term goals in mind (Cyders & Smith, 2008).

There were limitations to the study. Firstly, our sample size was small. Fritz and MacKinnon (2007) reported statistical power for combinations of small (.14), medium (.39), and large (.59) a and b paths. In our study, both a and b paths are at least medium as the coefficient of the bivariate correlation between neuroticism and negative urgency (a path) is .51 and the coefficient of the partial correlation between negative urgency and AUDIT after controlling for neuroticism (b path) is .48. The recommended sample size for bias-corrected bootstrapped confidence intervals when the effect sizes of both a and b are medium is 71 (Fritz & MacKinnon, 2007). As our sample size is somewhat smaller than the recommended one, we take our findings as preliminary and strongly recommend replication of the findings with bigger sample sizes. A second limitation is that our design was cross-sectional and causality remains unclear. Although, our findings are consistent with our proposed theoretical mechanism (neuroticism \rightarrow negative urgency \rightarrow problematic alcohol use), they cannot be taken as a proof of a causal connection. Furthermore, the present pilot study was very specific in focus and did not include other important variables (e.g., coping). Finally, our sample was restricted to second-year university students and it is unclear whether our results generalize to social drinkers of a different age and socioeconomic status.

Despite these limitations, our findings indicate that among university students it is not distress but acting impulsively when distressed that puts one at risk for problematic alcohol use. The results are clinically relevant to prevention programs given the fact that problematic alcohol use is extremely common in university students worldwide.

Glossary

Negative urgency: The tendency to act impulsively under conditions of negative affect

Neuroticism: The tendency to experience negative emotional states

Problematic alcohol use: Alcohol drinking patterns that lead to negative alcohol-related consequences

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Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

Notes on contributors



Dr. Harilaos Papachristou obtained his BSc in psychology from Sussex University, UK, in 2004, and his MSc in Substance Misuse (with distinction) from the same university in 2005. In 2006–2007, he completed his second MSc in Foundations of Clinical Psychology (with distinction) in the University of Wales, Bangor, UK. In 2008, he completed an internship in the B' University Psychiatric Clinic

of the Faculty of Medicine in Aristotle University, Thessaloniki, Greece. In 2009, he completed his second internship in the Association of Alzheimer's Disease and Related Disorders, Thessaloniki, Greece. In September 2009, he started his PhD in psychology in the Department of Clinical Psychological Science (CPS) in the Faculty of Psychology and Neuroscience, in Maastricht University (the Netherlands), which he finished successfully in 2013. During his PhD, he investigated the role of inhibition and impulsivity in cue-elicited craving for alcohol in social and dependent alcohol drinkers and in relapse. He is currently interested in the role of learning-motivational mechanisms and emotion-based personality dispositions, such as Neuroticism and Negative Urgency, in Addiction and excessive appetites as well as in the context of aversive motivation, e.g., chronic and acute pain.



Dr. Chantal Nederkoorn's research is mainly aimed at the question why some people tend to eat too much. More specifically, she is interested in the influence of inhibition and impulsivity, of learning and conditioning and environmental influences, like pricing, advertisements, and variety. In addition, she is interested in why some people tend to eat too little: on picky eating

and the role of food texture and tactile sensitivity. Recently, she has become interested in the effects of boredom, which not only appear to provoke people to eat more, but also to self-administer negative stimuli, like electric shocks. Finally, she is interested in addiction and other types of excessive behavior.



Anita Jansen, PhD, studied clinical psychology (1986; cum laude) at Utrecht University. She completed her PhD thesis on binge eating at Maastricht University (1990). Since 1999 she has been a full professor in the Department of Clinical Psychological Sciences at Maastricht University. Her research activities cover a broad domain: the primary focus is the experimental study of maintenance mechanisms and

vulnerability factors in eating disorders, obesity, dieting disorders, and addictive behaviors. A secondary focus is the study of cognitive and behavioral interventions aimed at reducing the psychopathology. She has received an award for excellence in teaching and has performed many key university functions (vice-dean, chair of department).

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