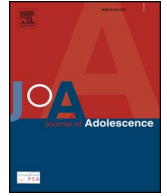


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Perceived control of anxiety as a moderator in the relationship between anxiety sensitivity and problematic alcohol use among adolescents

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ABSTRACT

The current study examined perceived control over anxiety as a moderator in the relationship between AS and (1) alcohol use frequency and (2) binge drinking frequency among 80 community-recruited adolescents ($M_{\text{age}} = 15.40$; 40% female). Eighty-five percent of adolescents reported consuming an alcohol beverage, while 39.5% reported binge drinking. Results indicated significant interactions between AS and perceived control. More specifically, when perceived control was low, higher anxiety sensitivity was related to increased frequency of alcohol use days, but not with binge drinking days. Alternatively, when perceived control over anxiety was high, elevated anxiety sensitivity was associated with a decreased in binge drinking days, but not with alcohol use days. Findings suggest that influence of perceived control over anxiety may be another important, malleable factor that should be considered in future etiological and intervention-oriented work targeting anxiety sensitivity and alcohol misuse among adolescence.

Problematic alcohol use, such as frequent use or binge drinking (i.e. consuming five or more drinks on an occasion), during adolescence is a serious public health concern (Hanson & Chen, 2007; World Health Organization, 2014). Recent estimates indicate that alcohol remains the most widely used substance among adolescents, with 64% endorsing consuming alcohol, and 47% reporting having been drunk, by the end of high school (Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2016). Rates of binge drinking are also high among older adolescents, with approximately 30% of high schoolers endorsing binge drinking at least once in the past 30 days (Miller, Naimi, Brewer, & Jones, 2007). Further, extant work consistently links alcohol use during adolescence with a host of adverse psychological (Cairns, Yap, Pilkington, & Jorm, 2014; O'Brien, Becker, Spirito, Simon, & Prinstein, 2014) and behavioral difficulties (Bryant, Schulenberg, O'malley, Bachman, & Johnston, 2003). Neuropsychological work also has linked underage drinking to impairments in functional brain activity and elevated risk of neurodegeneration (Zeigler et al., 2005). Given these negative consequences, identifying malleable risk factors (i.e., manipulatable constructs that precede and may influence outcomes) related to problematic alcohol use behaviors is essential to the design of developmentally-sensitive intervention programs.

One such factor receiving an increasing amount of empirical attention is anxiety sensitivity (DeMartini & Carey, 2011) – the misattribution of the anxiety symptoms (e.g., elevated heart rate, blushing) to harmful or negative anxiety-related consequences (e.g., serious health conditions, social rejection) or the catastrophizing of physical sensations associated with anxiety (McNally, 2002;

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Reiss, Peterson, Gursky, & McNally, 1986). Extant work conducted with adults indicates that individuals high in anxiety sensitivity report increased frequency of alcohol consumption (Stewart, Zvolensky, & Eifert, 2001), and show prospective risk for developing an alcohol use disorder (Schmidt, Buckner, & Keough, 2007). A limited, but growing body of work conducted with adolescents indicates that anxiety sensitivity may play a similar role in influencing problematic alcohol use. For example, anxiety sensitivity is positively associated with negative reinforcement drinking motives (e.g., drinking to alleviate negative affect; Comeau, Stewart, & Loba, 2001; Stewart et al., 2001) among both adolescents and adults, and preliminary tests of interventions targeting anxiety sensitivity indicate both efficacy and effectiveness in reducing drinking-related outcomes among adolescents (Conrod, Castellanos, & Mackie, 2008; Conrod, Stewart, Comeau, & Maclean, 2006; Conrod et al., 2013). However, few studies have examined features that may influence anxiety sensitivity-related risk among adolescents (cf. depression; Lechner et al., 2014); identifying factors that may enhance or reduce risk is key to tailoring and strengthening anxiety sensitivity interventions aimed at alcohol use problems. One promising target is perceived control over anxiety-relevant events.

Research indicates that individuals high in anxiety sensitivity and low in perceptions of their ability to regulate or control their anxiety report elevated levels of emotional distress (Taylor, 2014) and engage in more avoidance behaviors (White, Brown, Somers, & Barlow, 2006). Regarding substance use specifically, research conducted with adults indicates that anxiety sensitivity and control over anxiety-related events each are uniquely associated with multiple substance use outcomes, although work examining alcohol use specifically is limited (Gregor, Zvolensky, McLeish, Bernstein, & Morissette, 2008). In one experimental study targeting anxiety sensitivity, control, and response to caffeine, college students were randomly assigned to one of two perceived control conditions: (1) the “perceived control” group was informed that a safe medication would be made available to counteract any caffeine-related arousal symptoms; whereas (2) the “no perceived control” group was not informed of any medication and was instead informed that symptoms of caffeine use would persist, regardless of discontinuation in the study (Telch, Silverman, & Schmidt, 1996). Results of this study indicated that participants with high anxiety sensitivity who were randomly assigned to a “no perceived control” group had a greater emotional response to the caffeine administration as compared to the students with low anxiety sensitivity and/or those assigned to the perceived control group (Telch et al., 1996). This sensitivity to the effects of acute intoxication may hasten the learning of negative reinforcement consumption and thus the development of use-related problems. While these findings aid in the development of anxiety and substance use intervention efforts among adults, specific processes identified in adulthood, particularly those related to alcohol and other substance use, cannot be assumed to exist or function in the same manner during adolescence (Blumenthal, Leen-Feldner, Badour, & Babson, 2011; Cicchetti & Rogosch, 2002; Deas, Riggs, Langenbucher, Goldman, & Brown, 2000).

Understanding the relative roles of anxiety sensitivity and perceived control over anxiety may be important for the development of intervention efforts targeting problematic alcohol use among adolescents for at least three reasons. First, adolescence is characterized by rapid psychobiological development directly relevant to both anxiety sensitivity and perceived control; specifically, the presence of abrupt, often unpredictable somatic changes (Petersen, 1988; Torsheim & Wold, 2001), as well as heightened responsivity to arousal-related stimuli (Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000; Steinberg, 2008) contribute to a context in which such cognitive vulnerability may translate into dysfunction. Second, adolescence is a sensitive period in terms of affect management, including increased diversification and uptake of varied stress-management approaches (e.g., voluntary disengagement; Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Zimmer-Gembeck & Skinner, 2011). Lastly, alcohol-related expectations, motives, and patterns of use are forming during this period (Cooper, 1994; Schell, Martino, Ellickson, Collins, & McCaffrey, 2005), which prospectively predict problematic consumption later in life (King & Chassin, 2007; McCambridge, McAlaney, & Rowe, 2011). Together, appropriate identification of risk factors (e.g. increased anxiety sensitivity) and moderating variables (e.g., perceived control over anxiety) during adolescence may aid in undercutting the development of problematic use behaviors before they begin to form (Conrod et al., 2006).

With this backdrop, the current study examined the moderating influence of perceived control over anxiety in the association between anxiety sensitivity and alcohol use in a community-recruited sample of adolescents. Drawing upon research conducted with adults (Taylor, 2014; Telch et al., 1996), it was hypothesized that there would be a significant interaction between anxiety sensitivity and perceived control over anxiety. More specifically, among adolescents with low perceived control over anxiety-related events, high anxiety sensitivity would be associated with elevated levels of problematic drinking – alcohol consumption days and binge drinking days. Alternatively, among adolescents with high perceived control over anxiety, there would be no relationship between anxiety sensitivity and problematic drinking. Further, to assess the robustness of these findings, data will be examined while controlling for theoretically- and empirically-related covariates. More specifically, it was expected that the original hypothesis would remain significant after controlling for age (DeWit, Adlaf, Offord, & Ogborne, 2000), gender (Eaton et al., 2012), and negative affect (Howell, Leyro, Hogan, Buckner, & Zvolensky, 2010), each of which are associated with the selected alcohol use variables.

1. Method

1.1. Participants

The final sample comprised 80 community-recruited adolescents ($M_{\text{age}} = 15.40$, $SD = 1.45$ years; 40% female) who reported alcohol consumption within the past six months during initial screening. All materials and procedures were approved by the University Institutional Review Board prior to participant contact. Data were drawn from a sample of community-recruited adolescents (ages 12 to 17) who took part in a larger laboratory-based study on emotional vulnerability ($N = 116$ total). Selection criteria (assessed via telephone and again at the laboratory appointment) for the larger study were: (1) age 12–17 years, (2) past six

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