



Is anxiety sensitivity a risk factor for, or complication of, alcohol misuse? A meta-analysis

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ABSTRACT

Anxiety sensitivity (AS) refers to a dispositional tendency to respond to one's anxiety sensations with fear. Longstanding theoretical accounts implicate AS in alcohol misuse; however, the relationship between AS and alcohol misuse remains unclear. We addressed this by testing whether AS is a risk factor for, and/or complication of, alcohol misuse by conducting a rigorous meta-analysis using random effect models. Our literature search yielded 15 studies ($N = 9459$). Studies were included if they used a longitudinal design, assessed AS and alcohol misuse at baseline, and assessed alcohol misuse and/or AS at follow-up. Results failed to support AS as a risk factor for, or complication of, alcohol misuse. Researchers are encouraged to test if the link between AS and alcohol misuse emerges under specific conditions (e.g., elevated state anxiety).

1. Introduction

Alcohol misuse is associated with adverse social, economic, and personal outcomes. For instance, excessive consumption of alcohol confers risk for accidents and injuries and is a contributing factor in over 200 different health problems (World Health Organization, 2014). Given these negative consequences, advancing our understanding of risk factors for alcohol misuse is essential.

One putative risk factor for alcohol misuse is anxiety sensitivity (AS). AS refers to a dispositional tendency to respond to one's anxiety sensations with fear (Reiss & McNally, 1985; Reiss, Peterson, Gursky, & McNally, 1986). This fear response is thought to stem from the belief that anxiety sensations have harmful consequences (Reiss et al., 1986; Reiss & McNally, 1985). It has been demonstrated that alcohol consumption results in reductions in the emotional reactivity individuals high in AS experience related to these feared physical sensations (MacDonald, Baker, Stewart, & Skinner, 2000). Thus, it has been theorized by Stewart, Samoluk, and MacDonald (1999) that people higher in AS may be more likely to use alcohol to eradicate, regulate, or decrease fear and/or arousal associated with the feared anxiety sensations (i.e., the risk model).

While cross-sectional research consistently links AS to alcohol use (e.g., Stewart, Peterson, & Pihl, 1995; Stewart, Zvolensky, & Eifert,

2001), prospective research examining whether AS is a risk factor for alcohol misuse has not consistently supported this relationship. In young adolescents, baseline levels of AS are unrelated to the number of drinks consumed per occasion and to binge drinking at follow up (Jurk et al., 2015; Malmberg et al., 2013), suggesting AS is not a risk factor for alcohol misuse. However, results from Schmidt, Buckner, and Keough (2007), although lacking the proper controls for a stringent test of the risk model (e.g., not controlling for baseline alcohol misuse), imply that AS may predict the development of an alcohol use disorder in older adolescents and young adults. Similarly, evidence suggests reducing AS via intervention results in decreased alcohol-related problems, further suggesting that AS is causally linked to alcohol use (e.g., Olthuis, Watt, Mackinnon, & Stewart, 2015).

As research investigating the potential role of AS as a risk factor for alcohol misuse has produced notable inconsistencies, it is possible that an alternative model of the relationship between AS and alcohol misuse may be warranted to explain the concurrent association between these two variables. A scar/complication model positing that alcohol misuse results in temporary (complication) or permanent (scar) changes in AS has been proposed as one such alternative model (Stewart et al., 1999). Within this model, changes in AS are theorized to occur as a result of alcohol use. For instance, alcohol misuse can result in unpleasant physiological sensations such as elevated heart rate and/or sweating

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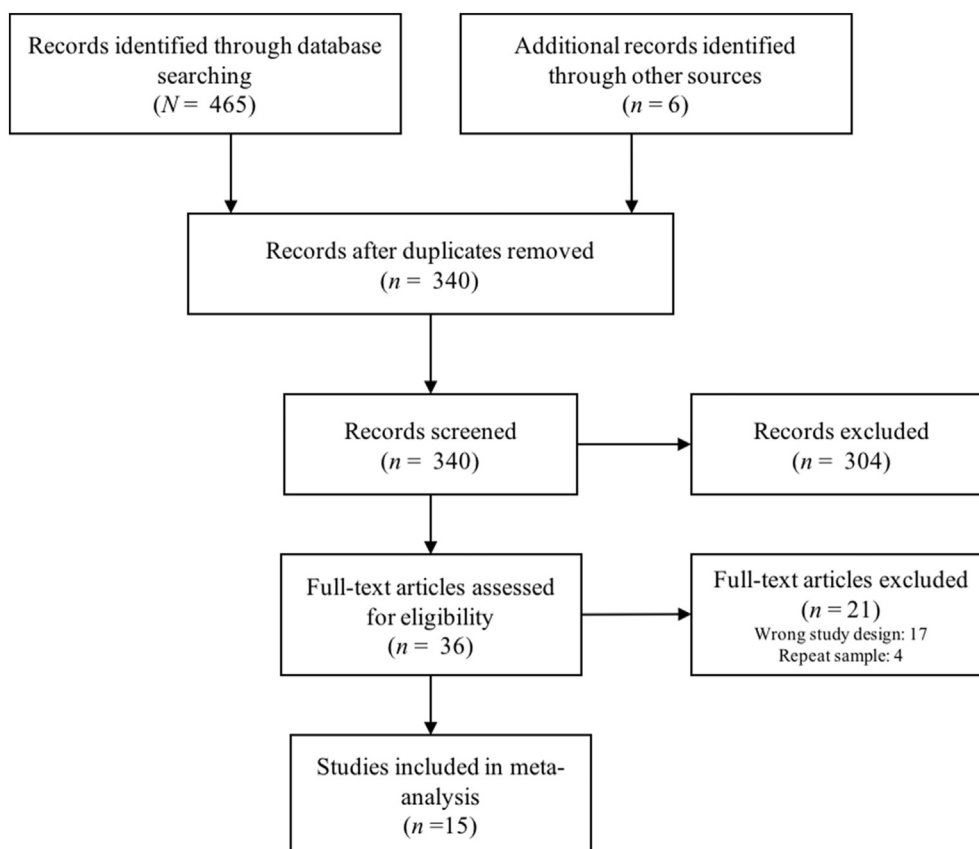


Fig. 1. PRISMA flowchart of literature search and study selection.

(either during intoxication or during a hangover). These sensations may become feared, and that fear may subsequently be generalized, such that an individual begins to fear all physiological anxiety-related sensations. Unfortunately, while data exists that would allow for an empirical evaluation of the scar/complication models, these models have not been formally tested or investigated.

1.1. Advancing research on the AS-alcohol misuse relationship using meta-analysis

Despite ample research on AS and alcohol misuse, the temporal precedence and directionality of the relationship between AS and alcohol misuse remain unclear. Since determining the nature of the relationship between AS and alcohol misuse is essential for treatment and prevention efforts, an increased understanding is urgently needed. To this end, a comprehensive synthesis of available data is crucial. Such a synthesis would allow for the implementation of statistical controls (i.e., whether AS predicts follow-up alcohol misuse beyond baseline alcohol misuse and vice versa) that are missing from extant studies (e.g. Schmidt et al., 2007), as well as allow for an examination of moderating variables (e.g., age), which might help to explain inconsistent findings in the AS-alcohol misuse literature. Moreover, as existing longitudinal studies of AS and alcohol misuse vary widely in how they assess alcohol misuse, a systematic effort to synthesize findings based on alcohol misuse operationalization will allow for an investigation of whether AS is a vulnerability factor for specific alcohol outcomes (e.g., alcohol-related problems vs. alcohol quantity) and/or whether specific alcohol misuse variables predict longitudinal change in AS.

1.2. Objectives and hypotheses

We tested whether AS is a risk factor for, or complication of, alcohol

misuse by conducting a comprehensive meta-analysis. While cross-sectional research has found conflicting evidence of AS's association with quantity of alcohol use (Stewart et al., 1995, 2001), research does suggest AS is related to increased frequency of alcohol consumption (Stewart et al., 2001), frequency of binge drinking (Stewart et al., 1995, 2001), and alcohol-related problems (Chavarria et al., 2015). Given these findings, we expected to find similar results in prospective research on AS. Specifically, we hypothesized that, while controlling for baseline levels of the alcohol misuse measure in question, AS would predict increased frequency of alcohol consumption, increased frequency of binge drinking, and increased alcohol-related problems, but would not significantly predict increases in quantity of alcohol consumption. Additionally, we investigated whether AS is a complication of alcohol misuse; however, given the absence of literature examining whether AS is a complication of alcohol misuse, we considered questions concerning this model to be exploratory. Finally, we also explored whether the relationship between AS and alcohol misuse is moderated by age, percentage of females in the sample, and time lag between measurements.

2. Method

2.1. Study identification

Medline, Psycinfo, ERIC, and Proquest Dissertations and Theses were searched to locate longitudinal studies of AS and alcohol misuse. Literature searches were conducted using keywords and Boolean search terms (“anxiety sensitive” OR “anxiety sensitivity” OR “fear of fear” OR “anxiety sensitivity index” OR ASI) AND (alcohol* OR drinking OR “substance use” OR “substance abuse” OR “substance misuse”) AND (longitudinal OR “repeated measure” OR “serial measure” OR prospective OR “multi-wave” OR “follow up” OR cohort). We did not

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