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Psychometric evaluation of a Swedish version of the Shortened Desires for Alcohol Questionnaire (Shortened-DAQ)

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ABSTRACT

Introduction: Craving is a clinically important feature of alcohol use disorders (AUD), representing a diagnostic criterion as well as a target for treatment. The Desire for Alcohol Questionnaire (DAQ) is a widely used scale to measure craving. The aim of the current study was to evaluate the psychometric properties of a Swedish version of the Shortened-DAQ.
Method: The English DAQ was translated into Swedish and back translated to English. Individuals with a diagnosis of AUD (n = 118) participated in a laboratory experiment comprising presentation of alcohol and non-alcohol cues, as well as consumption of an alcoholic drink, with the aim of exploring changes in the craving responses following pharmacological treatment for AUD. Subjective craving across the experimental conditions was recorded using Shortened-DAQ and a Visual Analogue Scale (VAS). The psychometric analysis of the Shortened-DAQ investigated some important aspects of reliability, validity and the factor solution using principal components analysis.
Results: Cronbach's alphas were above 0.8 across all sessions, the test-retest correlations were statistically significant. In the alcohol cue session the Shortened-DAQ total score was significantly greater compared to the non-alcohol cue session, and correlated significantly with the VAS craving item across all sessions. The principal component analysis resulted in two significant factors comprised of (1) Alcohol desire and reinforcement and (2) Ability to control drinking. No difference in psychometric properties between treatment and placebo groups were found.
Conclusion: In future clinical studies on alcohol craving responses in Swedish patients with AUD, we suggest the use of the Swedish Shortened-DAQ, due to its comparably swift administration and overall acceptable psychometric properties.

1. Introduction

Craving is a central component in substance use disorders and described as a "strong desire/urge to consume a substance of abuse (The World Health Organization, 1992). Experience of craving is also included as a diagnostic criterion for substance use disorders in the last version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (American Psychiatric Association, 2013) and the International Classification of Diseases (ICD 10). The important role of craving in alcohol use disorders (AUD) has been well established both theoretically and clinically. For example, craving responses have shown to be stronger for individuals suffering from AUD compared to social drinkers (e.g. Kramer et al., 2010; Sinha et al., 2009). In addition, a significant number of individuals diagnosed with AUD fulfill the craving criterion (de Bruijn, van den Brink, de Graaf, & Vollebergh, 2005). Some studies have also demonstrated that craving responses predict relapse to undesirable alcohol consumption (Flannery et al., 2001; Ray, Meskew-Stacer, & Hutchison, 2007). With respect to treatment, psychosocial interventions for AUD often focus on coping with craving, e.g. by identifying triggers that lead to craving and developing of coping skills to handle craving (Magill & Ray, 2009). Further, the existing pharmacological AUD treatments (e.g. naltrexone, nalmefene and acamprosate) have been developed with the aim of attenuating craving responses as a means of reducing relapse to alcohol use (Franck & Jayaram-Lindström, 2013).

Although craving is an important component of AUD, there is a lack of consensus regarding its definition (Kavanagh, Andrade, & May, 2005; Drummond, 2001; Rosenberg, 2009). A strong desire or urge to use alcohol is considered the core feature, but a broader dimensionality of the concept of craving has been proposed, including additional characteristics such as anticipated positive or negative reinforcement (Love, James, & Willner, 1998; Rosenberg, 2009; Niaura, 2000), obsessive thoughts and an experience of difficulties to refrain from alcohol consumption (Anton, Moak, & Latham, 1995).

An additional complexity is that currently there exist several scales for measuring craving and they often contain items that target different aspects of the concept. Retrospective experiences of craving, lasting over

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a longer time period, is assessed by scales such as the Obsessive Compulsive Drinking Scale (OCDS) (Anton et al., 1995) and Penn Alcohol Craving Scale (PACS) (Flannery, Volpicelli, & Pettinati, 1999), measuring subjective experiences of e.g. the ability to control drinking, intrusive thoughts on alcohol and alcohol expectancies. On the other hand, acute craving responses lasting for a couple of minutes with varying intensity (e.g. Rohsenow & Monti, 1999; Drummond, 2001; Ooteman, Koeter, Verheul, Schippers, & van den Brink, 2007, Plebani et al., 2012) are usually measured using the Visual Analog Scales (VAS), which comprise one or two items focused solely on subjective experience of the urge to drink and the "high" experienced (e.g. Mann et al., 2014; Sinha et al., 2009; Miranda et al., 2014). More elaborate scales have also been used to measure acute responses but also covering a broader dimensionality of the concept of craving (May et al., 2014; Ooteman et al., 2007; Bohn et al., 1995) an example of which is the Desire for alcohol Questionnaire (DAQ) (Love et al., 1998) measuring craving responses on four dimensions (subscales): "strong desires/intentions to drink," "negative reinforcement," "positive reinforcement," and "the ability to control drinking".

Collectively, craving is a complex phenomenon, central to diagnosis and clinical treatment outcome of AUD. Proof-of-concept laboratory experiments including craving provocation studies, are essential in the process of medication development and in order to compare results between such studies it is critical to reach a consensus in the field on the validity of the craving scales utilized. To our knowledge, there are no scales in the Swedish language measuring instant craving responses. The aim of the present study was thus to perform a psychometric evaluation of the Shortened-DAQ in a Swedish sample of AUD patients. It is common practice in clinical studies that craving scales are administered as part of a larger battery of questionnaires leading to an increased risk of response-errors. This challenge was addressed in a recent study by Mo, Deane, Lyons, and Kelly (2013) by reducing the length of the DAQ-scale to six-items and still demonstrating good psychometric properties. Similarly, a Shortened version of the DAQ scale comprising 14 items, has shown similar psychometric properties as the original version with 36 items (Kramer et al., 2010; Pasche, Garner, Baldwin, & Sinclair, 2013). To address the shortcomings (i.e., minimize interference during cue-reactivity) related to administering extended battery of questionnaires and long craving scales in experimental studies, the Shortened-DAQ used in the present study comprised eight items from the four subscales. This has the additional value of measuring different dimensions of craving responses, not possible with the use of a single VAS-item and has the added advantage of swift administration between the experimental procedures.

2. Method

2.1. Translation and revision of the Shortened-DAQ

The DAQ measures craving responses on four subscales using a 7-point Likert scale for each item, and has demonstrated good reliability with Cronbach's α ranging from 0.88 to 0.93 (Pasche et al., 2013). Scores on each subscale are either summarized or calculated as an average, creating an index-score of alcohol craving.

Our goal was to create a Swedish version of the Shortened-DAQ scale, suitable for administration during alcohol cue craving experiments, and it should be sensitive to instantaneous changes in craving across different experimental conditions. Therefore, the scale needed to be brief, and we decided à priori to include 2 items per subscale from the original English version of the Shortened-DAQ (14 items), i.e. 8 items in total. The English Shortened-DAQ was therefore discussed in a consensus meeting within the research group with clinical staff fluent in Swedish and English providing input on which items corresponded best to a Swedish context. The result of this discussion was the elimination of the following 6 items: I want a drink so much I can almost taste it; My desire to drink now seems overwhelming: I would do almost anything to have a drink now; I am going to drink as soon as I possibly can; I would feel as if all the bad things in my life had disappeared if I drank now; Even major problems in my life would not bother me if I drank now. The final 8 items and their subscales are presented in Table 4.

The 8-item version of the Shortened-DAQ was then translated to Swedish according to the following steps: (1) translation into Swedish by a researcher, (2) translation back into English by a bilingual researcher (3) consensus and resolution between the versions within the research group, (4) testing of the questionnaire in five Swedish-speaking healthy volunteers and (5) 13 pilot AUD patients in order to confirm the accurateness of the content as well as to make sure that the respondents interpreted the items in the same way and that the response choices were appropriately described. No further revisions were made after reverse translation and testing of the questionnaire. Items were scored on a seven-point Likert scale where 1 and 7 indicated "Do not agree at all" and "Fully agree", respectively. The total DAQ score was calculated by adding rating scores of each individual items together.

2.2. Participants and procedure

The present study was based on data collected from two studies focusing on pharmacological treatment for alcohol dependence (Hammarberg, Jayaram-Lindström, Beck, Franck, & Reid, 2009; Khemiri et al., 2015). Also, data from 13 pilot patients recruited prior to the treatment studies with the aim of evaluating if laboratory procedures (see below) reliably induced alcohol craving. In all, the present study comprises data from 118 individuals. Participants in the studies were men and women diagnosed with alcohol dependence according to DSM-IV. The main exclusion criteria were any other substance use disorder (except nicotine), other major psychiatric disorder, severe somatic illness and concurrent use of psychoactive medication. Patients went through either two (Khemiri et al., 2015) or three (Hammarberg et al., 2009) weeks of pharmacological treatment and both studies were performed in the same laboratory with similarly trained research staff. At the last day of treatment, patients participated in a laboratory experiment, comprising the following sessions: (1) Baseline 1; (2) Non-alcohol cue session; (3) Baseline 2; (4) Alcohol cue session in which alcohol related visual, tactile, olfactory, and auditory stimuli were presented; (5) Alcohol priming session, in which subjects consumed a standardized alcohol dose (0.2 g EtOH/kg bodyweight). Baseline1 and Baseline 2 sessions were done before each cue session, on average 25 min apart, and comprised no cue presentation and were included to assess that no carry-over effects from previous session were present. Each cue presentation lasted approximately 5–7 min and comprised alcohol/neutral video and presentation of alcoholic/neutral drinks with instructions to pour and smell the chosen drink. The priming session consisted of the subject drinking an alcoholic beverage of their choice, at their own pace. Subjective measurements were administered immediately after cue presentation and finishing of the drink in order to detect largest potential changes in craving. The rationale for including these different sessions was to evaluate the psychometric properties of the scale across different experimental condition and thus testing the feasibility to utilize the scale in alcohol cue experiments. Further information regarding the experiment procedure is presented in detail in the original articles (Khemiri et al., 2015 and Hammarberg et al., 2009).

Subjective measurements were recorded after each session. For subjective alcohol craving responses, the Shortened-DAQ was used along with a VAS comprising the single item "How much craving for an alcoholic drink do you experience right now?" (Reid, Flammino, Starosta, & Palamar, 2006; Miranda et al., 2014). Being an established mode for measuring craving responses and also swift to administer, the VAS was used in order to validate the Shortened-DAQ in this study. The craving VAS ranged from 0 to 100, with the anchoring words "No craving at all" and "Strongest possible craving; If alcohol was available it would have been impossible to resist" at 0 and 100, respectively. In a subset of patients ($n = 56$; Khemiri et al., 2015), VAS items asking about current levels of