Evaluating the relationship between explicit and implicit drinking identity centrality and hazardous drinking

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ABSTRACT

Introduction: Drinking identity strength (how strongly one views oneself as a drinker) is a promising risk factor for hazardous drinking. A critical next step is to investigate whether the centrality of drinking identity (i.e., the relative importance of drinking vs. other identity domains, like well-being, relationships, education) also plays a role. Thus, we developed explicit and implicit measures of drinking identity centrality and evaluated them as predictors of hazardous drinking after controlling for explicit drinking identity strength.
Methods: Two studies were conducted ($Ns = 360$ and 450, respectively). Participants, who self-identified as full-time students, completed measures of explicit identity strength, explicit and implicit centrality, and the Alcohol Use Disorders Identification Test (AUDIT). Study 1a evaluated two variants of the implicit measure (short- vs. long-format of the Multi-category Implicit Association Test); Study 1b only included the long form and also assessed alcohol consumption.
Results: In Study 1a, implicit and explicit centrality measures were positively and significantly associated with AUDIT scores after controlling for explicit drinking identity strength. There were no significant differences in the implicit measure variants, but the long format had slightly higher internal consistency. In Study 1b, results replicated for explicit, but not implicit, centrality.
Conclusions: These studies provide preliminary evidence that drinking identity centrality may be an important factor for predicting hazardous drinking. Future research should improve its measurement and evaluate implicit and explicit centrality in experimental and longitudinal studies.

1. Introduction

Despite the long-standing emphasis on studying the self in psychology, identity assessments have been largely absent from empirical studies of alcohol misuse until recently. An emerging body of research has demonstrated that identification with alcohol-related behaviors and groups is associated with a wide range of drinking outcomes among college students (Lindgren, Foster, Westgate, & Neighbors, 2013a; Lindgren et al., 2013b, 2016a), community samples (Werntz, Steinman, Glenn, Nock, & Teachman, 2016), and treatment samples (Buckingham, Frings, & Albery, 2013). In particular, measures of *drinking identity* assess the strength of identification with drinking behavior (Lindgren et al., 2013a, 2013b), or alcohol itself (Gray, Laplante, Banon, Ambady, & Shaffer, 2011), and are robust predictors of drinking outcomes even after controlling for other well-established cognitive risk

factors for hazardous drinking (Lindgren, Ramirez, Olin, & Neighbors, 2016b). To our knowledge, however, the *centrality* of drinking identity (i.e., its importance relative to other domains of identity, such as one's relationships) has not been assessed with either implicit or explicit measures, nor do we know how it relates to hazardous drinking. Should centrality predict drinking outcomes, it suggests another potential intervention strategy (i.e., reducing the importance of one's drinking identity and/or increasing the importance of a different domain), which is critical given the burden of hazardous drinking nationally (Naimi, Nelson, & Brewer, 2010) and internationally (Rehm et al., 2009). We, therefore, developed implicit and explicit measures of drinking identity centrality and evaluated their utility as predictors of hazardous drinking (Studies 1a and 1b) and alcohol consumption (Study 1b only), after controlling for explicit measures of drinking identity strength.

1.1. Drinking identity strength and centrality

Current drinking identity measures typically assess the strength of that identity. These measures include self-report or *explicit measures* like the Alcohol Self Concept Scale (Lindgren et al., 2013b; adapted from Shadel & Mermelstein, 1996), which asks individuals to rate

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their agreement with statements regarding how strongly one identifies with alcohol or drinking. A set of indirect or *implicit measures* have also been developed from the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998), which assesses the relative strength of automatic associations between constructs in memory (automatic in the sense of being difficult to consciously control). For example, the drinking identity IAT developed by Lindgren et al. (2013b) measures associations between stimuli represented by the categories *me*, *not me*, *drinker*, and *non-drinker*, and assumes that individuals with stronger (relative to weaker) drinking identities will have stronger associations between *drinker* and *me* stimuli relative to *drinker* and *not me* stimuli. Consistent with meta-analyses that support unique contributions of implicit and explicit measures of substance use (see Reich, Below, & Goldman, 2010; Roefs et al., 2011), implicit and explicit drinking identity measures evaluated simultaneously have both been shown to be robust predictors of alcohol consumption, problems, cravings, and risk of alcohol use disorders among college (cross-sectional: Lindgren et al., 2013b; longitudinal: Lindgren et al., 2016a, 2016b) and community samples (cross-sectional: Werntz et al., 2016). Additionally, the interaction of implicit and explicit drinking identity was also recently found to be a significant predictor of in vivo drinking in a laboratory-based alcohol taste test (Frings, Melichar, & Albery, 2016) and of risk of alcohol use disorder in a community sample (Lindgren et al., 2016c). Further, compared to other well-established cognitive factors (i.e., alcohol expectancies, drinking norms, drinking motives), and other implicit alcohol-related associations (i.e., alcohol-approach, alcohol-excite, and alcohol-cope associations), drinking identity is a more robust and consistent predictor of drinking outcomes (Lindgren et al., 2013a, 2013b, 2016a). These findings suggest that both explicit and implicit measures of drinking identity are important cognitive risk factors for hazardous drinking.

Our conceptualization of drinking identity stems from the personality and individual differences tradition, and we view identity as synonymous with the self-concept (see Lindgren, Neighbors, Gasser, Ramirez, & Cvencek, 2016d). Thus, we have focused on individual differences in implicit and explicit drinking identity wherein individuals will vary in the strength of that drinking identity. Consistent with general conceptualizations of the self-concept (e.g., Markus & Wurf, 1987) and associative models of the self-concept (e.g., Greenwald et al., 2002), we view identity as multi-faceted (i.e., individuals will have many identities) and as inherently dynamic (i.e., different identities will be activated in different contexts and will change across the lifespan). These different identities, which we refer to as *identity domains*, are thought to be organized hierarchically. Consistent with this assumption, research indicates that identity domains that are perceived as more central, or important, have been shown to have stronger influences on behavior and psychological functioning (Simon, 1992; Stryker & Serpe, 1982). We note that consideration of the centrality of an identity is also reflected in more social psychological formulations of identity, which emphasize groups and group membership (see Leach et al., 2008; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). Leach and colleagues (2008), in particular, have put forth and found support for a hierarchical model of in-group identification. In this model, centrality, which they define as the extent one's membership in a given group is *important* and *salient*, plays a unique and important role in terms of the extent individuals are sensitive to and defend against threats to their in-group. Thus, whether considering identity from an individual differences or social group perspective, there is support for evaluating the importance of a particular identity domain relative to other identity domains.

Evaluating drinking identity centrality is not only important from the vantage of psychological theory. Doing so may also pinpoint unique intervention targets. For example, consider an individual who strongly identifies with drinking and for whom drinking is more central than other identity domains. Interventions could certainly focus on reducing the strength of the identity via shifting the individual's drinking identity to be a moderate drinker or a non-drinker, but they could also focus on decreasing the centrality of the drinking identity via increasing the importance of alternate, competing identities. Thus, to the degree that identity centrality represents a unique construct (relative to identity strength), it might also be an additional intervention target. While speculative, it is possible that it may be easier for some people to strengthen an alternate identity (e.g., become more invested in their identity as a romantic partner or as student), and thereby indirectly reduce the importance of drinking identity, as opposed to trying to reduce drinking identity directly. Focusing on strengthening an alternate identity could be particularly important when individuals have lost a valued identity (see Dingle, Cruwys, & Frings, 2015, for work on the link between losing a valued identity and addiction) or when individuals lack other valued aspects of identity to focus on (see related work in Acceptance and Commitment Therapy on leading a valued life as a means to reduce mental health problems; Twohig, 2012).

To date, few studies have compared different aspects of identity and their relative importance in the field of alcohol research, though this comparative importance of distinct identity domains has been a valuable predictor in other fields; for example, race (Sellers, Kuperminc, & Damas, 1997), gender (Martire, Stephens, & Townsend, 2000; Settles, Jellison, & Pratt-Hyatt, 2009), and parenting (Gaunt & Scott, 2014). In the alcohol field, we know of one study from the United Kingdom (Tarrant & Butler, 2011) that compared identity domains (but not drinking identity). Students who had their "student" identities primed were less likely to report intentions of drinking within recommended guidelines for safe drinking compared to students who had "nationality" identities primed, suggesting that "student" identities have stronger associations with risky drinking (Tarrant & Butler, 2011). Some studies of drinking identity have evaluated multiple drinking-related identities relative to one another. For example, Buckingham et al. (2013) assessed both identification with addiction and with treatment recovery groups among members of Alcoholics Anonymous and Narcotics Anonymous, finding that individuals who perceived a "recovering addict" identity as more favorable relative to an "addict" identity were less likely to report relapse in the past month, past year, and past two years. A next critical step is, therefore, to develop measures that can assess the importance of identification with drinking relative to other common, meaningful identity domains and evaluate their predictive validity. Thus, we sought to develop implicit and explicit measures of drinking identity centrality and evaluate them as predictors of hazardous drinking.

1.1.1. Measuring drinking identity centrality

Dual process models of identity (general self-concept: Back, Schmukle, & Egloff, 2009; substance self-concept: Lindgren et al., 2016d) and behavior (general: Strack & Deutsch, 2004; addiction: Wiers et al., 2007) delineate two types of cognitive processes – implicit (fast/reflexive/impulsive) and explicit (slow/reflective/controlled). While recent evidence suggests that this dichotomous implicit/explicit separation may be an oversimplification (Van Bavel, Jenny Xiao, & Cunningham, 2012), these models nonetheless highlight the importance measuring both aspects of centrality.

Explicit cognitive processes are typically assessed via self-report that allows for more reflective controlled responding. Along these lines, to measure explicit drinking identity centrality, we sought to develop a questionnaire to evaluate the self-reported importance of drinking relative to each of a set of alternative identity domains. We drew from measures of alcohol problems (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001; White & Labouvie, 1989) and from evidence-based cognitive behavioral psychotherapies (Behavioral Activation: Hopko, Lejuez, Ruggiero, & Eifert, 2003; Acceptance and Commitment Therapy: Hayes, Strosahl, & Wilson, 1999) to identify alternative, important identity domains: education/vocation, relationships (with friends, family, and peers/colleagues), and well-being (physical and mental health).

Implicit cognitive processes are typically assessed indirectly and often use reaction time measures. As noted above, implicit drinking identity associations have been most commonly assessed with the IAT,