



Desire thinking as a predictor of craving and binge drinking: A longitudinal study



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HIGHLIGHTS

- Desire thinking is a longitudinal predictor of craving and binge drinking
- Imaginal prefiguration is a longitudinal predictor of craving
- Verbal perseveration is a longitudinal predictor of binge drinking
- Desire thinking may be targeted in psychological treatment

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ABSTRACT

Desire thinking is a conscious and voluntary cognitive process orienting to prefigure images, information and memories about positive target-related experience. Desire thinking has been found to be associated with both craving and alcohol use in clinical and non-clinical populations, however its role in predicting craving and problematic drinking patterns has never been investigated using a longitudinal design. The central aim of the present study was to explore the role of desire thinking at Time 2 (3 months post-baseline) in predicting craving and binge drinking and Time 3 (6 months post-baseline), controlling for levels of both these constructs and Time 1 (baseline). One hundred and thirty three non-hazardous drinkers were assessed on craving and binge drinking at Times 1 and 3, and on desire thinking at Time 2. Findings showed that desire thinking at Time 2 predicted craving and binge drinking at Time 3, controlling for craving and binge drinking at Time 1. Furthermore, the imaginal prefiguration component of desire thinking at Time 2 was found to mediate the relationship between craving at Times 1 and 3; conversely the verbal perseveration component of desire thinking at Time 2 was found to mediate the relationship between binge drinking at Times 1 and 3. The implications of these findings are discussed.

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Desire thinking has been defined as a conscious and voluntary cognitive process orienting to prefigure images, information and memories about positive target-related experience (Caselli & Spada, 2010, 2011, 2013, 2015, 2016). Research has indicated that desire thinking is a bi-dimensional construct comprising of imaginal prefiguration and verbal perseveration components (Caselli & Spada, 2011, 2015). Imaginal prefiguration refers to the voluntary allocation of attentional resources to

target-related cues and a multi-sensory and conscious elaboration of these in the form of anticipatory target-related positive imagery and memory recall. Verbal perseveration refers to the voluntary and prolonged self-talk regarding worthwhile reasons for engaging in target-related activities and their achievement. Desire thinking thus involves the active and controlled processing of the pleasant consequences of achieving a desired target, reviewing good reasons for reaching it, and mentally planning how to do so (Caselli & Spada, 2016). It has been argued (Caselli & Spada, 2010, 2011) that desire thinking differs from craving in that the latter broadly describes the subjective experience of an urge to seek out and achieve a target, or practice an activity, in order to reach its desired effects (Marlatt, 1978). Craving can manifest in multiple ways including as intrusive thoughts (Beck,

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Wright, Newman, & Liese, 1993), a drive or motivation (Cox & Klinger, 2002), substance wanting (Robinson & Berridge, 1993), an emotional state (Tiffany, 1999), a physical sensation (Paulus, 2007), or a stress response (Sinha & Li, 2007). Desire thinking, in contrast, is conceptualized as a conscious, and controlled intentional target-related information processing (Caselli & Spada, 2011, 2016); a form of extended thinking (Caselli & Spada, 2011, 2015, 2016) characterized by a self-focused attentional orientation, perseveration, low levels of awareness about the voluntary nature of its activation (and consequently a low perception of control of it) and a negative impact on the down-regulation of emotional states.

Research has shown that thinking about a desired cue (for example imagining a substance and how to assume it) in individuals with alcohol abuse is closely associated to levels of craving (Caselli & Spada, 2010; Green, Rogers, & Elliman, 2000; Tiffany & Drobes, 1990) and induces physiological changes similar to direct experience (Bywaters, Andrade, & Turpin, 2004; Witvliet & Vrana, 1995). With regards to the imaginal prefiguration and verbal perseveration components of desire thinking, research has shown that these constructs: (1) are associated to increases in craving in alcohol users following experimental manipulation (Caselli, Soliani & Spada, 2013); (2) predict craving in alcohol abusers independently from level of alcohol use (Caselli & Spada, 2011); (3) are associated to the experience of craving in non-clinical samples (Caselli & Spada, 2015); and (4) when induced, lead to a significant increase in distress and urge to use alcohol in patients with alcohol use disorder (Caselli, Gemelli & Spada, 2016).

Caselli, Spada and colleagues (Caselli & Spada, 2011, 2013, 2015; Spada & Wells, 2009; Spada, Caselli, & Wells, 2012; Spada, Caselli, & Wells, 2013; Spada, Caselli, Nikčević, & Wells, 2015) purport that the escalation and persistence of craving and problematic drinking patterns is partially dependent on the activation of desire thinking. Specifically, in their metacognitive model of the inter-relationships between components of desire thinking and craving, Caselli and Spada (2015) argue that the imaginal prefiguration component of desire thinking should principally predict the activation of craving whilst the verbal perseveration component should contribute to its escalation and therefore be more proximally linked to behavioural enactment. The purported specific proximity of the verbal perseveration component of desire thinking to behavioural enactment has been recently evidenced in a series of studies which showed that: (1) in spite of both desire thinking components correlating to craving only the verbal perseveration component was found to predict levels of alcohol use in a clinical population (Caselli & Spada, 2011); and (2) the verbal perseveration component of desire thinking was found to be the strongest discriminant predictor across the continuum of drinking behaviour (Caselli, Ferla, Mezzaluna, Rovetto, & Spada, 2012) and in the classification as a problem drinker (Caselli et al., 2015). Consequently, the metacognitive model assumes that decision-making processes and mental planning about target achievement (verbal perseveration) should have a stronger impact on behaviour (binge drinking) compared to the multi-sensory elaboration of target-related information (imaginal prefiguration) which would be predominantly linked to the activation of craving.

In view of the above the aim of present study was to explore, for the first time, the role of desire thinking in predicting craving and binge drinking employing a longitudinal design. We employed three time points in our study: Time 1 (baseline), Time 2 (3 months post-baseline) and Time 3 (6 months post-baseline). Based on Caselli and Spada's (2015) model we hypothesized that:

- (1) Desire thinking at Time 2 would be predict craving at Time 3 controlling for binge drinking and craving at Time 1; and
- (2) Desire thinking at Time 2 would be predict binge drinking at Time 3 controlling for binge drinking and craving at Time 1;
- (3) Imaginal prefiguration and verbal perseveration at Time 2 would mediate the relationship between craving at Times 1 and 3; and

- (4) Verbal perseveration at Time 2 would mediate the relationship between binge drinking at Times 1 and 3.

1. Method

1.1. Design

We employed a longitudinal design with data collection occurring at three time points. At Time 1 (baseline) we collected data on binge drinking and craving. At Time 2 (3 months post-baseline) we collected data on desire thinking. At Time 3 (6 months post-baseline) we collected data on binge drinking and craving.

1.2. Participants and procedure

Participants were recruited from the community through leaflets and advertisements placed in a variety of work settings. A total of 150 individuals, who defined themselves as non-abstemious, took part in the study. Inclusion criteria were: (1) 18 years of age or above; (2) consenting to the study; (3) understanding spoken and written Italian; and (4) scoring <8 on the Alcohol Use Disorders Identification Test, considered a cut-off point identifying non-hazardous drinking (AUDIT; Babor, De la Fuente, Saunders, & Grant, 1992). Of 150 screened volunteers, 17 were excluded because they did not meet the inclusion criteria and scored >8 on the AUDIT. The final sample was composed by 133 participants (77 females; mean age = 34.1 years, SD = 7.3 years). Participants were mostly employed (81.2%), and college graduates (51.2%). All of the participants completed the study and contributed data used in the analyses. No drop-outs were reported at follow-up. Ethics approval for the study was obtained from the ethics panel of London South Bank University.

1.3. Measures

1.3.1. Binge drinking

This was assessed by asking participants to state the number of times in the previous month they had consumed >4 (for females) or 5 (for males) alcoholic beverages in a single drinking session (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994).

1.3.2. Penn alcohol craving scale

(PACS; Flannery, Volpicelli, & Pettinati, 1999). The PACS consists of 5 items assessing the level of craving for alcohol. The first 3 questions centre on the duration, frequency and intensity of craving. The fourth question asks to rate the ability to resist drinking if alcohol were available. The final question asks to rate overall average craving for alcohol during the previous week. Higher scores indicate higher levels of craving. This self-report instrument has been shown to possess good psychometric properties (Flannery et al., 1999).

1.3.3. Desire thinking questionnaire

(DTQ; Caselli & Spada, 2011). The DTQ consists of 10 items, broken down into two factors of five items, assessing desire thinking. The first factor concerns the perseveration of verbal thoughts about desire-related content and experience (verbal perseveration) and includes items such as: "I mentally repeat to myself that I need to practice the desired activity". The second factor concerns the tendency to prefigure images about desire-related content and experience (imaginal prefiguration) and includes items such as: "I imagine myself doing the desired activity". Items are general in content and refer to the desired activity which is specified in the instructions. Higher scores indicate higher levels of desire thinking. The DTQ total score and factor scores have shown good factor structure, internal consistency, test-retest reliability, predictive and discriminative validity (Caselli & Spada, 2011).

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