



Desire thinking as a mediator of the relationship between novelty seeking and craving



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ARTICLE INFO

Article history:

Received 7 February 2015

Received in revised form 14 March 2015

Accepted 16 March 2015

Available online 27 March 2015

Keywords:

Addiction

Addictive behaviors

Craving

Desire thinking

Temperament

ABSTRACT

Background: The construct of craving has been shown to play a crucial role in the development and maintenance of addictive behaviors. Both novelty seeking and desire thinking have been identified, respectively, as important temperamental and cognitive predictors of craving.

Aims: In the present study we aimed to explore the relative contribution of novelty seeking and desire thinking towards craving, hypothesizing a sequence of multiple mediating relationships starting from novelty seeking and moving onto imaginal prefiguration, verbal perseveration and craving in serial fashion.

Method: A convenience sample of 270 individuals completed measures assessing novelty seeking, desire thinking, and craving relating to a chosen activity.

Results: Findings showed that, controlling for age and gender, desire thinking components predicted craving over and above novelty seeking. The indirect effect from novelty seeking to craving, via desire thinking components, was significant thus supporting a multiple-mediational sequence. Finally, the relationship between imaginal prefiguration and craving was found to be partially mediated by verbal perseveration.

Conclusions: The findings provide support for the conceptualization of desire thinking as an independent construct in predicting craving over and above novelty seeking.

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1. Introduction

Craving has been defined as a subjective experience that prompts individuals to seek out and achieve a target, or practice an activity, in order to reach its desired effects (Marlatt, 1987). This construct has long been identified as an important contributor to behavioral loss of control and is considered a key area of treatment focus for the addictive behaviors (e.g. O'Malley, Krishnan-Sarin, Farren, Sinha, & Kreek, 2002; Paille et al., 1995). Craving has also been shown to be a major risk factor in triggering relapse (Evren, Cetin, Durkaya, & Dalbudak, 2010; Killen & Fortmann, 1997) and in predicting generally worse outcomes in the treatment for substance abuse (Cooney, Litt, Morse, Bauer, & Gaupp, 1997; Miller, Westerberg, Harris, & Tonigan, 1996).

Research has shown that craving is influenced by a variety of individual and contextual variables such as perceived drug availability

(Dar, Rosen-Korakin, Shapira, Gottlieb, & Frenk, 2010; Dar, Stronguin, Marouani, Krupsky, & Frenk, 2005), expectancies (Dols, van den Hout, Kindt, & Willems, 2002) and stress (Koob, 2008). Psychobiological models of craving have emphasized that craving is directly influenced by biological and temperamental individual differences (Cloninger, 1996). In particular, novelty seeking has shown to play an important role in predicting craving. Novelty seeking is defined as a temperament trait moderately heritable, normally distributed, and developmentally and situationally stable (Cloninger, 1986) which makes individuals quick-tempered, excitable, exploratory, curious, enthusiastic, ardent, easily bored, impulsive and disorderly (Kose, 2003). With respect to the relationship between novelty seeking and craving, research has shown that the most vulnerability to alcohol dependence may be linked to high levels of novelty seeking (Mulder, 2002); moreover, high novelty seekers have been described as at increased risk of using drugs of abuse relative to low novelty seekers (Bardo, Donohew, & Harrington, 1996; Wills, Vaccaro, & McNamara, 1994). Finally, research has suggested that novelty seeking represents a vulnerability factor for substance abuse in general (Gabel, Stallings, Schmitz, Young, & Fulker, 1999; Hosak, Preiss, Halir, Cermakova, & Csemy, 2004). With respect to the risk of relapse, Evren, Durkaya, Evren, Dalbudak, and Cetin

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(2012) have found novelty seeking to be related with relapse both directly and indirectly via craving.

More recently, in the elaborated intrusion (EI) theory of desire (Kavanagh, Andrade, & May, 2005; Kavanagh, May, & Andrade, 2009; May, Andrade, Panabokke, & Kavanagh, 2004), it has been suggested that the intensity and duration of craving may be, in part, determined by the activation of a cognitive elaboration process defined as ‘desire thinking’ (Caselli & Spada, 2010, 2015). Desire thinking has been described as a voluntary cognitive elaboration of a desired target imaginal prefiguration and verbal perseveration (Caselli & Spada, 2010; Kavanagh, Andrade, & May, 2004). Imaginal prefiguration refers to the allocation of attention to target-related information and to the tendency to anticipate positive imagery or positive target-related memories. Verbal perseveration refers to prolonged self-talk about reasons for engaging in target-related activities and their achievement (Caselli & Spada, 2015). Desire thinking has been shown to have a significant effect on craving across a range of addictive behaviors in a community sample (Caselli, Soliani, & Spada, 2013), predict craving in alcohol abusers independently from level of alcohol use (Caselli & Spada, 2011), and play a role across the continuum of drinking and smoking behavior (Caselli, Ferla, Mezzaluna, Rovetto, & Spada, 2012a; Caselli, Nikčević, Fiore, Mezzaluna, & Spada, 2012b). Similar findings have been replicated in problem gambling and problematic Internet use (Ferne et al., 2014; Spada, Caselli, Slaifer, Nikčević, & Sassaroli, 2014).

To our current knowledge, no study has explored the relative contribution of the temperamental facet of novelty seeking and desire thinking components towards craving. We hypothesized a sequence of multiple mediating relationships that begin from novelty seeking (as a broad vulnerability component) affecting imaginal prefiguration and verbal perseveration in a serial fashion (see Fig. 1). The order of mediators has been chosen on the basis of a conceptual model of the relationship between desire thinking and craving (Caselli & Spada, 2015). Following this model, imaginal prefiguration represents a more distal predictor on craving that is partially mediated by the activation verbal perseveration. This assumes that decision-making processes and mental planning about target achievement (verbal perseveration) should have a stronger impact on craving and may be activated by the multi-sensory elaboration of target-related information (imaginal prefiguration).

2. Methods

2.1. Participants

A convenience sample of 270 individuals (140 female) agreed to take part in the study. For purposes of inclusion participants were required to be at least 18 years of age and to be fluent in Italian. The mean age for the total sample, which consisted primarily of Caucasians, was 36.3 years (SD = 15.4) and the age range was 18 to 65 years.

2.2. Self-report instruments

2.2.1. Temperament and Character Inventory (TCI; Cloninger, Przybeck, Svrakic, & Wetzel, 1994)

For evaluating novelty seeking, the TCI of Cloninger et al. (1994) was used in its Italian version (Fassino et al., 2002). Novelty seeking is a 40-item higher order temperament trait composed of four aspects of lower order traits: Exploratory Excitability versus Stoic Rigidity (NS1), Impulsiveness versus Reflection (NS2), Extravagance versus Reserve (NS3), and Disorderliness versus Regimentation (NS4). Participants are asked to answer on a true/false scale. The TCI has good internal consistency (Cloninger et al., 1994; Sato et al., 1999), inter-tester reliability and test–retest reliability (Cloninger et al., 1994).

2.2.2. The Desire Thinking Questionnaire (DTQ; Caselli & Spada, 2011)

This self-report instrument consists of 10 items assessing desire thinking. It consists of two sub-scales of five items each. The first sub-scale 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 sub-scale 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 that may be specified in the instructions. Higher scores indicate higher levels of trait desire thinking. The DTQ total score and factor scores have showed good factor structure, internal consistency, test–retest reliability, predictive and discriminative validity (Caselli & Spada, 2011).

2.2.3. The General Craving Scale (GCS)

The GCS is a modified version of the Penn Alcohol Craving Scale (PACS; Flannery, Volpicelli, & Pettinati, 1999). The PACS includes 5 self-report items that measure the duration, frequency and intensity of craving. Each question is scaled from 0 to 6. In the general version adopted in this study the 5 self-report item structure was maintained but items were rephrased so as to not refer to a specific desire target but to that which participants had previously indicated. For example item 1 of PACS “How often have you thought about *drinking* or how good a *drink* would make you feel?” was modified to: “How often have you thought about *your desired target* or how good *achieving it* would make you feel?”

2.3. Procedure

Participants were recruited from e-mail contacts in a viral-like fashion, starting from the University of Pavia (Italy) mailing list. Participants who received the e-mail request to visit the study website were also asked to forward the address to individuals in their e-mail contacts and ask those individuals to do the same.

When participants first visited the study website, the first webpage explained the purpose of the study: “To investigate the relationship between craving, thinking and temperament”. Participants were then

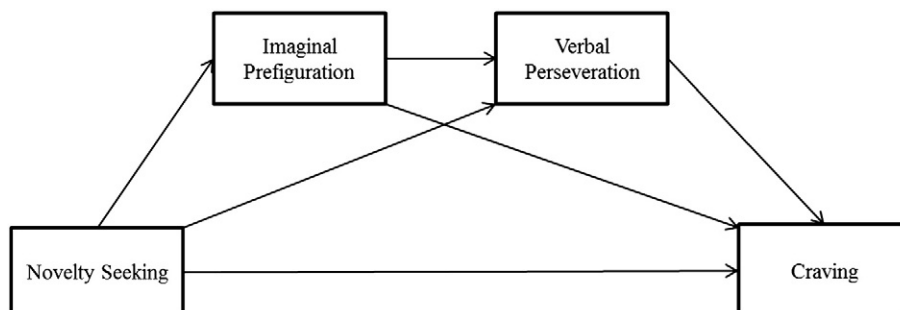


Fig. 1. Multiple-step multiple mediational conceptual model of desire thinking components mediators in serial in the relationship between novelty seeking and craving.

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