Problematic internet pornography use: The role of craving, desire thinking, and metacognition

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HIGHLIGHTS

- We validated an existing model of metacognition, desire thinking, and craving for problematic internet pornography use.
- Desire thinking escalates craving for internet pornography.
- Metacognitions appear to activate and perpetuate desire thinking.
- The metacognitive model was supported, including relationships between desire thinking and negative affect.
- Targeted metacognitive interventions may help to reduce problematic internet pornography use.

ARTICLE INFO

ABSTRACT

Defined as sexually explicit material that elicits erotic thoughts, feelings, and behaviours, internet pornography is a prevalent form of media that may facilitate problematic use and craving for engagement. Research suggests that superordinate cognitions and information processing, such as desire thinking and metacognition, are central to the activation and escalation of craving in addictive behaviours. The current study aimed to contribute to the literature by testing the proposed metacognitive model of desire thinking and craving in a sample of problematic pornography users, while revising the model by incorporating negative affect. From a theoretical perspective, environmental cues trigger positive metacognitions about desire thinking that directly influence desire thinking, resulting in the escalation of craving, negative metacognitions, and negative affect. Participants were recruited via an online survey and screened for problematic internet pornography use. Path analyses were used to investigate relationships among the aforementioned constructs in a final sample of 191 participants. Consistent with previous research, results of this study validated the existence of metacognitive processes in the activation of desire thinking and escalation of craving, while indicating that desire thinking has the potential to influence negative affect. Additionally, results supported the role of significant indirect relationships between constructs within the revised model of metacognition, desire thinking, and psychopathology. Collectively, the findings demonstrate the clinical value of a metacognitive conceptualisation of problematic pornography use. Exploring the metacognitive mechanisms that underpin problematic internet pornography use may give rise to the development of new treatment and relapse prevention strategies.

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1. Introduction

1.1. Problematic pornography use

It is estimated that 42.7% of internet users view pornography and that 25% of daily search engine requests are specific to pornographic material (Ropelato, 2009; Young, 2008). While viewing sexually explicit material is not fundamentally problematic (Hald, Smolenski, & Rosser, 2013; Young, 2008), the accessible, affordable, and anonymous nature of internet pornography may lead to the development and maintenance of excessive use, and associated distress and functional impairment (Cooper, 1998; D'Orlando, 2011; Ross, Månsson, & Daneback, 2012; Wood, 2011). An assessment of the proposed criteria for hypersexual disorder found that excessive pornography use was the most prominent problem among 81% of those included in preliminary trials (Reid,

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Carpenter, Hook, Garos, Manning, Gilliland, et al., 2012; Reid, Garos, and Fong, 2012). Thus, the extent to which individuals engage in pornography use is an important health consideration.

Various conceptualisations of problematic internet pornography use have been proposed (e.g., sexual compulsivity, hypersexual behaviour, addiction) alongside numerous clinical implications, including emotional difficulties, negative cognitions, and functional impairment (McBride, Reece, & Sanders, 2007; Schneider, 2000). However, inconsistent methodology and measurement in pornography research have made the problematic nature of internet pornography use difficult to quantify, leading to numerous limitations across various studies and theoretical models (Ley, Prause, & Finn, 2014; Short, Black, Smith, Wetterneck, & Wells, 2012).

Researchers in the fields of substance use, gambling, and problematic internet use suggest that individuals whose pornography use is problematic may exhibit the following: (1) excessive behavioural engagement; (2) craving for behavioural engagement; (3) diminished self-control over the behaviour; and (4) continued behaviour despite personal, social, or occupational impairment (Grant, Potenza, Weinstein, & Gorelick, 2010; Koob & Le Moal, 2008; Kor et al., 2014; Love, Laier, Brand, Hatch, & Hajela, 2015; Potenza, 2006). While individuals may persist with pornography use due to the dynamics of positive and negative reinforcement, there is minimal research on the psychological processes that may enhance craving for viewing pornographic material (Griffiths, 2012; Short et al., 2012; Kraus & Rosenberg, 2014).

1.2. Desire thinking

Research indicates that problematic pornography use is characterised by a predominant urge for behavioural engagement, referred to as craving (Kraus & Rosenberg, 2014; Kor et al., 2014; Koob & Volkow, 2010). Few models of addictive behaviour have accommodated the cognitive processes that underpin the subjective experience of craving. Nevertheless, there is evidence to suggest that craving is influenced by voluntary engagement in cognitive elaboration, termed desire thinking (Caselli & Spada, 2010, 2011). Desire thinking encompasses imaginal and verbal cognitions that focus on a desired behaviour (Caselli & Spada, 2011). Imaginal prefiguration is characterised by the allocation of attentional resources to behaviour-related information, followed by mental imagery elaboration (e.g., imagination or memory recall) in anticipation of behavioural engagement. Verbal perseveration refers to extended self-talk regarding meaningful reasons for engaging in behaviour-related activities.

Research has demonstrated that desire thinking is an active process during craving in individuals with alcohol abuse, nicotine dependence, and problematic gambling (Caselli & Spada, 2010). Moreover, desire thinking appears to have a significant effect on craving across a range of subclinical addictive behaviours (Caselli, Soliani, & Spada, 2013), predict craving in alcohol abusers independently from level of alcohol use (Caselli & Spada, 2011), and exist across the continuum of drinking and smoking behaviour (Caselli, Ferla, Mezzaluna, Rovetto, & Spada, 2012; Caselli, Nikcevic, Fiore, Mezzaluna, & Spada, 2012). Desire thinking has been shown to predict individual classification as a problematic internet user and gambler when controlling for negative affect and craving (Fernie et al., 2014; Spada, Caselli, Slaifer, Nikčević, & Sassaroli, 2014). Collectively, these findings emphasise the role of desire thinking in the subjective experience of craving and support the distinction between desire thinking and craving as separate constructs.

1.3. The metacognitive model of desire thinking and craving

Desire thinking is considered maladaptive when it becomes perseverative and poorly regulated. Spada, Caselli, and Wells (2013) argue that metacognition is central in understanding dysregulation in desire thinking. Metacognition is defined as any cognitive processes that are involved in the appraisal, monitoring or control of cognition (Flavell,

1979), essentially it is thinking about thinking. Consistent with metacognitive theory, desire thinking is considered an extended form of thinking encompassed by Cognitive Attentional Syndrome (Spada et al., 2013). Extended thinking is considered problematic because it preserves negative cognitions and affect, contributes to dysfunctional self-beliefs, and increases the accessibility of negative information (Wells, 2009). Addictive behaviours characterised by desire thinking have maladaptive consequences including increased levels of craving and perception of being out of control, increased accessibility of behaviour-related information, and interference with craving regulation (Caselli & Spada, 2011; Caselli & Spada, 2013).

Metacognitions influence desire thinking because they reflect either positive or negative information that an individual has about their own desire thinking processes (Caselli & Spada, 2010, 2013). Positive metacognitions about desire thinking encompass the usefulness of desire thinking in distracting from negative thoughts and emotions (e.g., "I need to think about viewing pornography to avoid feeling overwhelmed"), and improving control over decisions and behaviours. Negative metacognitions about desire thinking embody the uncontrollability of behaviour-related thoughts (e.g., "when I begin thinking about viewing pornography I cannot stop") and loss of control over desire thinking. Recently, researchers have proposed a metacognitive model of desire thinking and craving (presented in Fig. 1) to explain the perseveration of desire thinking and subsequent escalation of craving (Caselli & Spada, 2015). In this model, positive metacognitions about desire thinking are associated with imaginal prefiguration (e.g., mental imagery or memories of desired behaviour) and verbal perseveration (e.g., self-talk or planning related to the desired behaviour), signifying the activation of desire thinking. Verbal perseveration is then associated with negative metacognitions about desire thinking and craving, symbolising the pathological transition of desire thinking. Finally, the association between positive and negative metacognitions about desire thinking resembles when desired behavioural engagement is not linked with the conscious experience of craving due to a perception of low control.

Caselli and Spada (2015) found the proposed model demonstrated good statistical fit in four clinical samples of different addictive behaviours including alcohol use, gambling, problematic internet use, and tobacco use. The only exception was that positive metacognitions about
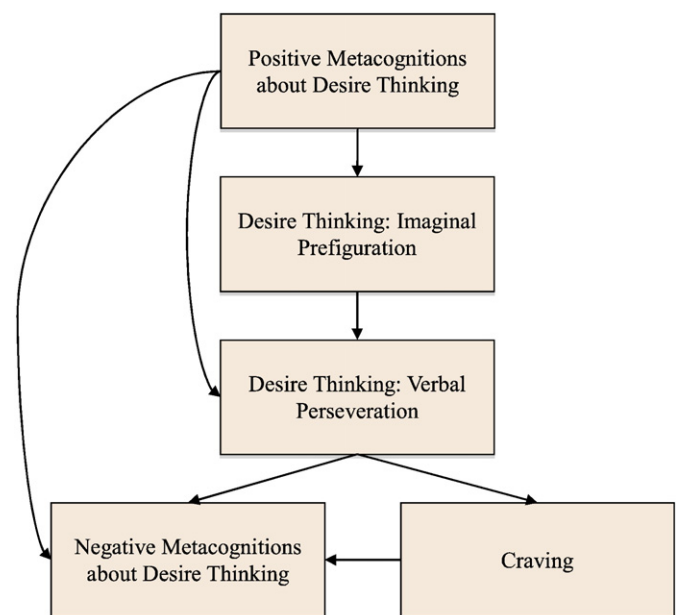

Fig. 1. Proposed metacognitive model of desire thinking and craving. Reprinted from "Desire thinking: What is it and what drives it?" by G. Caselli & Spada, 2015, *Addictive Behaviors*, 44, p. 72. Copyright 2014 by Elsevier Ltd. Reprinted with permission.