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The relative contribution of metacognitions and attentional control to the severity of gambling in problem gamblers



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ABSTRACT

The present study explored the relationship between metacognitions, attentional control, and the severity of gambling in problem gamblers. One hundred and twenty six problem gamblers completed the Depression Anxiety Stress Scales 21, the Meta-Cognitions Questionnaire 30, the Attentional Control Scale, and the Problem Gambling Severity Index. Results revealed that negative affect, four out of five metacognitions factors (positive beliefs about worry, negative beliefs about thoughts concerning danger and uncontrollability, cognitive confidence and beliefs about the need to control thoughts), and all attentional control factors (focusing, shifting and flexible control of thought) were correlated, in the predicted directions, with the severity of gambling. The same metacognitions were also found to be correlated, in the predicted directions, with attention focusing, however only negative beliefs about thoughts concerning danger and uncontrollability and cognitive confidence were found to be correlated with attention shifting and flexible control of thought. A hierarchical regression analysis showed that beliefs about the need to control thoughts were the only predictor of the severity of gambling controlling for negative affect. Overall these findings support the hypotheses and are consistent with the metacognitive model of psychological dysfunction. The implications of these findings are discussed.

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1. Introduction

Problem gambling has far reaching effects on numerous areas of an individual's life, including health, relationships with family and friends, and financial stability. Problem gambling has also been associated with alcoholism and drug use, depression and suicidal tendencies, and criminal behaviour (Morasco et al., 2006; Petry, Stinson, & Grant, 2005).

Cognitive behavioural therapy (CBT) has been used as the first line of treatment for problem gambling with a primary focus upon the restructuring of the content of thinking, such as tackling irrational beliefs and attitudes relating to gambling, which have been shown to be central in the development and maintenance of gambling problems (Gaboury & Ladouceur, 1989; Sharpe, 2002; Toneatto, 1999). There is evidence supporting CBT for problem gambling (Toneatto, 2005; Toneatto & Millar, 2004), however improvements appear to only occur in the short-term with relapse rates remaining high (Cowlshaw et al., 2012; Toneatto, Vettese, & Nguyen, 2007).

A fundamental limitation of CBT is its almost exclusive focus on targeting the content of thoughts at the detriment of not fully addressing other crucial components of cognition involved in the maintenance of psychological dysfunction. As Wells and Matthews (1996) state "cognitive theories of emotional disorder tend to consider only

limited elements of cognition, and they often neglect broader aspects such as attention, regulation of cognition, levels of control of processing, and interactions between varieties of processing" (p.881).

Twenty years ago Wells and Matthews (1994) put forward the Self-Regulatory Executive Function (S-REF) model with the specific aim of addressing how multiple levels of cognition (i.e. metacognition) are involved in the development and maintenance of psychological dysfunction. Over the last two decades the S-REF model has led to the development of disorder-specific formulations and treatments for a wide array of psychological disorders and a psychological treatment, metacognitive therapy (MCT), which has been evaluated across a series of studies with preliminary results indicating superior outcomes to CBT (Normann, van Emmerik, & Nexhmedin, 2014; Wells, 2009, 2013).

In the S-REF model, Wells and Matthews (1994, 1996) argue that psychological dysfunction is associated with a style of thinking termed the Cognitive Attentional Syndrome (CAS) which consists of heightened self-focused attention, recyclical thinking patterns (rumination and worry), avoidance and thought suppression, and threat monitoring. The activation and persistence of the CAS in response to stress are dependent on maladaptive metacognitions. Metacognitions refer to the information individuals hold about their own cognition and internal states, and about coping strategies that impact on both (Wells, 2000; Wells & Matthews, 1994, 1996). Examples of information individuals hold about their own cognition may include beliefs concerning the significance of particular types of thoughts, e.g. "It is bad to think X" or "I

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need to control thought X". Examples of information individuals hold about coping strategies that impact on cognition may include beliefs such as "Worrying will help me get things sorted out in my mind" or "Ruminating will help me solve the problem".

2. Metacognitions in gambling

Metacognitions have been found to predict psychopathology generally (for a review see Wells, 2009, 2013) and also play a role in the severity of clinical presentations across addictive behaviours, including alcohol (Hoyer, Hacker, & Lindenmeyer, 2007; Spada & Wells, 2005, 2006, 2008, 2009, 2010; Spada, Caselli, & Wells, 2013; Spada, Moneta, & Wells, 2007; Spada, Zandvoort, & Wells, 2007), Internet (Spada, Langston, Nikčević, & Moneta, 2008; Spada, Mohiyeddini, & Wells, 2008) and nicotine (Nikčević & Spada, 2008, 2010; Spada et al., 2007; Spada, Nikčević, Moneta, & Wells, 2007) use.

More recently, a preliminary study undertaken by Lindberg and colleagues (Lindberg, Fernie, & Spada, 2011) in a community sample found that metacognitions (negative beliefs about thoughts concerning uncontrollability and danger, and beliefs about the need to control thoughts) predicted gambling controlling for negative affect. These metacognitions refer to beliefs that certain thoughts should not be experienced, because of their negative content, and will lead to negative consequences if they are not controlled. The authors argued that the presence of such beliefs may increase the likelihood of gambling as a temporary means of achieving cognitive-affective regulation.

3. Attentional control and its possible role in gambling

Attentional control can be conceptualized as the ability to control attention in inhibiting a dominant response in favour of a less accessible, subdominant response that may be more functional (Derryberry & Reed, 2002; Rothbart & Bates, 1998). Derryberry and Reed (2002) have suggested three typologies of ability to voluntarily control attention: (1) attention focusing (e.g. "When I am working hard on something, I still get distracted by events around me"); (2) attention shifting (e.g. "I can quickly switch from one task to another"); and (3) flexible control of thought (e.g. "It takes me a while to get really involved in a new task"). Evidence has demonstrated that high levels of attentional control enable the modulation of reflexive emotional responses, whereas low levels of attentional control increase vulnerability to acting on dysfunctional emotional responses (Derryberry & Reed, 2002).

According to the S-REF model the activation and persistence of the CAS under conditions of stress will result in a reduction of the cognitive resources available to control attention, in turn influencing the efficiency of processing and belief change (Wells, 2009). Moreover, it is possible

that metacognitions may in part bias the overall ability to control attention. In support of this view, Spada, Georgiou, and Wells (2010) found that attention shifting and focusing negatively correlate with metacognitions (negative beliefs about thoughts concerning uncontrollability and danger and beliefs about the need to control thoughts). Research has also shown the presence of attentional bias towards gambling related stimuli in problem gamblers (for review see Hønsi, Mentzoni, Molde, & Pallesen, 2013). This includes both initial orienting towards gambling stimuli as well as delayed disengagement from stimuli (Brevers et al., 2011; Wolfing et al., 2011) which may be interpreted as deficits in attentional control.

4. Aims of the current study

To date, no study has investigated the association between attentional control and gambling. In addition, the only study which investigated the relationship between metacognitions and gambling (Lindberg et al., 2011) employed a convenience sample of participants. On the basis of the findings discussed we decided to test the following hypotheses in a sample of problem gamblers: (1) metacognitions (negative beliefs about thoughts concerning uncontrollability and danger, cognitive confidence, and beliefs about the need to control thoughts) will be positively correlated with severity of gambling; (2) attentional control will be negatively correlated with severity of gambling; (3) metacognitions will be negatively correlated with attentional control; and (4) metacognitions and attentional control will predict severity of gambling when controlling for negative affect. Negative affect was included as a control variable as it has been shown to correlate highly with problem gambling (Petry et al., 2005).

5. Method

5.1. Participants and procedure

The sample comprised of 126 participants (111 men) who reported being regular gamblers and scored above 8 on the Problem Gambling Severity Index (PGSI; Wynne, 2003). Inclusion criteria were: (1) 18 years of age or above; (2) consenting to the study; and (3) understanding spoken and written English. The mean age of the sample was 33.5 years (SD = 10.9) and ranged from 19 to 70 years. The mean score on the PGSI was 10.3 (SD = 2.4) and ranged from 9 to 18. The sample was 88.9% White, 5.6% Asian, 1.6% Black, 1.6% Chinese, 1.6% Mixed and 0.8% from another non-specified background.

Ethics approval for the study was obtained from an institution of higher education in the UK. A web link directing potential participants to the study website was sent to registered members of various gambling organizations. A total of 317 individuals took part in the

Table 1
Means, standard deviations, ranges and Spearman rho inter-correlations of variables.

	X	SD	Range	MCQ-30-PBW	MCQ-30-NBT	MCQ-30-CC	MCQ-30-BNT	MCQ-30-CS	ACS-F	ACS-S	ACS-FCT	PGSI
1. DASS-21	9.8	7.5	0–30	0.35**	0.57**	0.20*	0.31**	0.27**	−0.38**	−0.30**	−0.34**	0.35**
2. MCQ-30-PBW	9.6	3.9	6–24	–	0.56**	0.21*	0.29**	0.25**	−0.26**	−0.13	−0.13	0.35**
3. MCQ-30-NBT	10.1	4.1	6–24	–	–	0.26**	0.46**	0.33**	−0.31**	−0.27**	−0.21*	0.37**
4. MCQ-30-CC	10.0	4.0	6–24	–	–	–	0.17	0.14	−0.23**	−0.19*	0.26**	0.18*
5. MCQ-30-BNCT	11.0	3.9	6–24	–	–	–	–	0.47**	−0.37**	−0.04	−0.17	0.42**
6. MCQ-30-CS	14.3	4.9	6–24	–	–	–	–	–	−0.10	0.11	0.13	0.08
7. ACS-F	24.0	4.5	11–35	–	–	–	–	–	–	0.44**	0.32**	−0.34**
8. ACS-S	18.3	3.6	8–28	–	–	–	–	–	–	–	0.52**	−0.22*
9. ACS-FCT	11.9	2.1	7–16	–	–	–	–	–	–	–	–	−0.26**

Note. $n = 126$. DASS-21 = Depression Anxiety and Stress Scales 21; MCQ-30-PBW = Metacognitions Questionnaire 30-Positive Beliefs about Worry; MCQ-30-NBT = Metacognitions Questionnaire 30-Negative Beliefs about Thoughts; MCQ-30-CC = Metacognitions Questionnaire 30-Cognitive Confidence; MCQ-30-BNCT = Metacognitions Questionnaire 30-Beliefs about the Need to Control Thoughts; MCQ-30-CS = Metacognitions Questionnaire 30-Cognitive Self-consciousness; ACS-F = Attentional Control Scale-Focusing; ACS-S = Attentional Control Scale-Shift; ACS-FCT = Attentional Control Scale-Flexible control of thought; PGSI = Problem Gambling Severity Index.

* $p < .05$.

** $p < .01$.

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