



Short Communication

Trait urgency and gambling problems in young people by age: The mediating role of decision-making processes



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HIGHLIGHTS

- Little is known about mechanisms that mediate the link between urgency-gambling.
- The link was mediated by lower deliberative decision-making and delay discounting.
- A distinct pathway was observed for lower levels of deliberative decision-making.
- Differences in gambling problems were found in 18–21 years vs. 16–17 / 22–25 years.
- Differences in deliberative decision-making were found in 16–17 years vs. 18–21 years.

ARTICLE INFO

Available online 6 March 2015

Keywords:

Gambling
Impulsivity
Urgency
Delay discounting
Decision-making

ABSTRACT

Although the personality trait of urgency has been linked to problem gambling, less is known about psychological mechanisms that mediate the relationship between urgency and problem gambling. One individual variable of potential relevance to impulsivity and addictive disorders is age. The aims of this study were to examine: (i) a theoretical model associating urgency and gambling problems, (ii) the mediating effects of decision-making processes (operationalized as preference for small/immediate rewards and lower levels of deliberative decision-making); and (iii) age differences in these relationships. Participants comprised 986 students (64% male; mean age = 19.51 years; SD = 2.30) divided into three groups: 16–17 years, 18–21 years, and 22–25 years. All participants completed measures of urgency, problem gambling, and a delay-discounting questionnaire involving choices between a smaller amount of money received immediately and a larger amount of money received later. Participants were also asked to reflect on their decision-making process. Compared to those aged 16–17 years and 22–25 years, participants aged 18–21 years had a higher level of gambling problems and decreased scores on lower levels of deliberative decision-making. Higher levels of urgency were associated with higher levels of gambling problems. The association was mediated by a lower level of deliberative decision-making and preference for an immediate/small reward. A distinct pathway was observed for lower levels of deliberative decision-making. Young people who tend to act rashly in response to extreme moods, had lower levels of deliberative decision-making, that in turn were positively related to gambling problems. This study highlights unique decision-making pathways through which urgency trait may operate, suggesting that those developing prevention and/or treatment strategies may want to consider the model's variables, including urgency, delay discounting, and deliberative decision-making.

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1. Introduction

Youth problem gambling is an emerging public health issue in many European countries (Molinaro et al., 2014; Volberg, Gupta, Griffiths, Olason, & Delfabbro, 2010) and it has been associated with significant

health and psychosocial problems (Blinn-Pike, Worthy, & Jonkman, 2010). A recent study has shown that 1.6–5.3% of adolescents living in nine European countries had probable problem gambling (Molinaro et al., 2014).

Although a growing number of studies have suggested a clear relationship between pathological gambling and high impulsivity (see MacLaren, Fugelsang, Harrigan, & Dixon, 2011 for a meta-analysis), these studies provide a limited understanding of the psychological mechanisms involved, as they have often been conducted with little consideration given to the multifaceted nature of impulsivity.

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Early approaches to impulsivity focused on unidimensional definitions (e.g., Eysenck & Eysenck, 1978), but successive refinement of these aspects of personality has reported several related – but also independent – dimensions (Patton, Stanford, & Barratt, 1995; Whiteside & Lynam, 2001). Whiteside and Lynam (2001) clarified the multidimensionality of impulsivity by subdividing it into four distinct facets: sensation seeking, lack of premeditation, lack of perseverance, and urgency (the latter defined as the tendency to act impulsively in response to strong emotions) (Sharma, Markon, & Clark, 2014; Whiteside & Lynam, 2001). Studies conducted on gamblers from the community (i.e., non-clinical participants) have shown that gambling problems are predicted by high urgency (Canale, Vieno, Griffiths, Rubaltelli, & Santinello, 2015; Fischer & Smith, 2008) and lack of premeditation (Cyders & Smith, 2008). The psychological mechanisms by which heightened urgency might influence gambling disorder are not clearly understood. A previous research study found that young people who tend to act rashly in response to extremely positive moods show higher enhancement and coping motives, which are, in turn, positively related to gambling problems (Canale et al., 2015).

Young people's gambling behavior tends to be emotion-based (Cyders & Smith, 2008) with negative emotional mood states increasing the likelihood of gambling engagement (Griffiths, 2011). Both negative and positive urgency is strongly associated with emotional factors (Joseph, Liu, Jiang, Lynam, & Kelly, 2009). More specifically, urgency depends upon inadequate appraisal of (and response to) emotions that precede decisions. Urgency has been related to specific cognitive mechanisms (Bechara & Van der Linden, 2005). Research has shown that poor prepotent response inhibition at least partly underlies urgency (Billieux, Gay, Rochat, & Van der Linden, 2010; Gay, Rochat, Billieux, d'Acromont, & Van der Linden, 2008). More specifically, it has been shown that the tendency to make disadvantageous choices in a situation of decision-making under risk predicts high urgency that in turn predicts the occurrence of problematic behaviors (Billieux et al., 2010). Furthermore, urgency is related to impaired decision-making (e.g., Kräplin et al., 2014). The results provide evidence for reciprocal causal relationships between the decision-making process and urgency, although the effects of personality traits on psychological mechanisms were causally predominant. A previous longitudinal study (Castellanos-Ryan, Rubia, & Conrod, 2011) found that cognitive/motivational measures of disinhibition (poor response inhibition, reward response bias) mediate the longitudinal relationship between personality measures (e.g., impulsivity) and externalizing behaviors in adolescence (e.g., binge drinking and drug use). From this perspective, urgency may reflect a disposition toward gambling problems, depending on the decision-making process.

Consistent with Reyna and Farley's (2006) work, major explanatory models of risky decision-making can be roughly divided into (i) those that adhere to a rational behavioral decision-making framework that stresses deliberate, quantitative trading off of risks and benefits; and (ii) those that emphasize unconscious or irrational decision-making that appears to be the source of problems in adolescence (i.e., impulsive or reactive decision-making). Thus, in the present study, deliberative decision-making was considered as a measure of preferences based on conscious, analytical thought (e.g., Beyth-Marom & Fischhoff, 1997)¹ and the delayed reward

discounting was considered as a behavioral measure of preferences based on impulsive, intuitive, and affective thought (Weafer, Baggott, & de Wit, 2013).

According to Metcalfe and Mischel (1999), an increase of 'hot' system activation based on emotion appraisal and processing decreases the ability to delay gratification. Thus, urgency significantly predicts sensitivity to reward delay in the delay discounting task (Kräplin et al., 2014; Torres et al., 2013). Furthermore, several studies have shown that individuals with gambling problems discount delayed monetary outcomes at substantially higher rates than non problem-gambling controls (e.g., Albein-Urios, Martínez-González, Lozano, & Verdejo-Garcia, 2014; Clark, 2014; MacKillop et al., 2011 for a meta-analysis). In addition, urgency and lack of premeditation facets of impulsivity (i.e., the tendency to take into account the consequences of an act before engaging in that act) significantly correlate with each other (Van der Linden et al., 2006; Whiteside & Lynam, 2001), suggesting that higher levels of urgency could be related to lower levels of deliberative decision-making. Deliberative decision-making is the tendency to consider options and consequences before making a decision, and a failure to follow a deliberative process is associated with adolescent participation in a number of behaviors including substance use, risky sex, and delinquency (Wolff & Crockett, 2011).

An individual variable of potential relevance to impulsivity and addictive disorders is age. It has been found that: (i) urgency is heightened during adolescence compared to adulthood (Cyders & Smith, 2008); (ii) younger individuals discount delayed rewards more steeply than older individuals (e.g., Yoon et al., 2007); (iii) deliberative decision-making abilities develop over time, probably due to cognitive maturation, learning, and experience (e.g., Ariely, 2008; Casey, Jones, & Hare, 2008); and (iv) the basic intellectual abilities (such as working memory, digit-span and verbal fluency) reach adult levels at around 16 years of age long before the process of psychosocial maturation (which include scores of the self-report measures of impulsivity, risk perception, sensation seeking, future orientation and resistance to peer influence mentioned earlier) is complete well into the young adult years (Steinberg, 2008; Steinberg et al., 2009). These issues are highly pertinent in adolescent risk-taking. Although adolescents are stereotypically considered as risk takers (e.g., Burnett, Bault, Coricelli, & Blakemore, 2010; Steinberg, 2008), a recent meta-analysis reveals that adolescents do not always engage in more risk-taking than children and adults (Defoe, Dubas, Figner, & van Aken, 2014). These findings suggest that is important to examine age differences in risk-taking, and to determine whether these differences can be attributed to differences in how urgency and decision-making process contribute to gambling problems.

Consistent with the theoretical backgrounds reviewed, the current study aimed to test a theoretical model (see Fig. 1) linking urgency with gambling problems, taking into account the mediating role of decision-making processes (operationalized as preference for small/immediate rewards and a lower level of deliberative decision-making). It was hypothesized that the relationship between urgency and gambling problems is mediated by higher preference for small/immediate rewards, and a lower level of deliberative decision-making. Those relationships were tested in different subgroups of young people in accordance with their age band. According to previous studies (Ariely, 2008; Cyders & Smith, 2008; Yoon et al., 2007) it was predicted that each of these relationships would be larger in adolescents (16–17 years) than in young adults (18–21 years and 22–25 years).

2. Methods

2.1. Participants and data collection

The sample comprised 986 participants (64% male) with an age range of 16–25 years ($M = 19.51$, $SD = 2.30$), recruited to yield an age distribution designed to compare adolescents with two specific

¹ Decision theory defines how individuals should reason in order to choose the behavioral option that would be most beneficial in a given situation (see Beyth-Marom & Fischhoff, 1997). From this perspective, and in accordance with the Rangel, Camerer, and Montague (2008) model of decision-making, value-based decision-making involves thinking through five basic processes: (1) the construction of a representation of the decision problem, that involves identifying internal and external states as well as potential courses of action; (2) the valuation of the different actions under consideration; (3) the selection of one of the actions on the basis of their valuations; (4) after implementing the decision the brain needs to measure the desirability of the outcomes that follow (evaluation); (5) the outcome evaluation is used to update the other processes to improve the quality of future decisions (learning).

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