



The unique and common contributions of impulsivity and decision-making strategies among young adult Italian regular gamblers

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ABSTRACT

The purpose of this study is to verify the existence of an explanatory model of risk that starts with dysfunctional impulsivity, passes through maladaptive decision-making strategies, and culminates with pathological gambling. Self-reporting measures concerning impulsivity, decision making, and gambling were administered to 222 Caucasian young adults (53% male) ages 20 to 24 ($M = 22.1$; $SD = 3.1$) who were recruited in betting or bingo halls. Results show that buck-passing decision making partially mediated the relationship between non-planning impulsivity and gambling. Moreover, procrastination decision making partially mediated the relationship between attentional impulsivity and gambling. Thus, the findings show that young adults with personalities characterized by impulsivity tend to adopt maladaptive styles of decision making that predispose them to gamble. Among regular gamblers, the failure to resist an impulse pushes individuals to seek maladaptive cognitive styles to the solution of a problem, as could be the awareness of a behavioral addiction.

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Gambling is a common recreational activity in which more and more individuals in the West engage, but which becomes dysfunctional in a minority. Problem gambling, in which this behavior may distort the normal conditions of life at personal, relational, or financial levels, has a prevalence of 1–4% in Western populations. In the more stringent DSM-V, the diagnosis of “pathological gambling” has a prevalence of 0.5–1.5% (American Psychiatric Association, 2013). In the psychology literature, a great amount of research on gambling has led to the suggestion that there might be a general predisposition toward addiction in some individuals (Shaffer & Albanese, 2004). Cavedini, Riboldi, Keller, D’Annunzi, and Bellodi (2002), for example, hypothesized that individuals involved in pathological gambling could be characterized by neurobiological abnormalities which inhibit the “rational brake” in specific cortical areas that regulate the ability to make rational decisions. Conversely, many others researchers have tried to go beyond the simple concept of predisposition, suggesting that the complex behaviors linked to gambling would result from scarcity in a multiplicity of cognitive and emotional devices associated with decision making (Redish, Jensen, & Johnson, 2008). Beyond studies on neural circuitry considered central to neurobiological models of pathological gambling (Grant, Chamberlain, Schreiber, Odlaug, & Kim, 2011), there remains the dilemma of how to understand the relationship between predisposing characteristics and processes of decision making in individuals with addiction, considering that the processes through which people

make choices are based on hedonic motives than on rational motives (Franken & Muris, 2005; Leanza, Lo Porto, Passanisi, & Leanza, 2013; Pace, Madonia, Passanisi, Iacolino, & Di Maggio, 2015).

1. Impulsivity, decision making, and gambling

The process of deciding on the basis of instantaneous reward or, conversely, on postponed but elevated reward, is considered a decisive point on an adaptive psychosocial developmental trajectory. An adaptive decision-making function should be based on the postponement of impulsive urges for immediate gratification and persistence in goal-directed behavior to achieve positive outcomes in the future. Conversely, in at-risk or addicted behaviors, the selection of important choices is conditioned by factors very far from a rationale pathway: risky sexual behaviors, for example, are based on the anticipation of short-term reward rather than long-term risk assessment, and pathological gambling is predicted by cognitive impulsivity relative to controls (Lawrence, Luty, Bogdan, Sahakian, & Clark, 2009; Lo Cascio, Guzzo, Pace, & Pace, 2013). The process of seeking out validation of a choice can be faulty, as people fail in the consideration of possible alternatives or stop at the first alternative that seems correct (Phillips & Ogeil, 2011).

Among the predisposing or personal traits that can have a role in personal decision-making choices – and for this reason an underlined variable of addiction – is impulsivity, which can be described as the inability to tolerate long delays to reinforce presentation, or a preference for smaller more immediate rewards over larger but more delayed rewards (Ainslie, 1975). The complex multidimensional nature of impulsivity encompasses personality trait, cognitive, and behavioral

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components and involves both normal and abnormal individual differences in degree and severity of consequence (Hodgins & Holub, 2015). Several studies have indicated that impulsivity is associated with numerous disorders, including personality disorders such as antisocial and borderline disorders, attention deficit, bipolar, eating, substance use, and gambling disorders (Sharma, Markon, & Clark, 2014). The personality trait of impulsivity has been frequently associated with aberrant decision making (Baarendse, Winstanley, & Vanderschuren, 2013; Passanisi & Di Nuovo, 2015), including the tendency to react rapidly in decision-making or behavior with a lack of forethought, as well as reward sensitivity at the personality trait level. Zermatten, Van der Linden, d'Acremont, Jermann, and Bechara (2005) showed that decision making in pathological gamblers was influenced by the impulsivity-related trait of lack of premeditation; similarly, Morgan, Impallomeni, Pirona, and Rogers (2006) stated that among regular ecstasy users, elevated impulsivity was combined with impaired decision making in a risky decision-making task. Although these findings suggest an overlap between the neurobehavioral underpinnings of impulsivity and decision making, other studies have reported that impaired decision making and exaggerated impulsivity can manifest independently (Franken & Muris, 2005; Guzzo, Pace, Lo Cascio, Craparo, & Schimmenti, 2014). The complexity of these concepts and their incorporation of several cognitive and behavioral components make it difficult to investigate the relationship between impulsivity and poor decision making and how it affects behavior. Impulsive decision makers operate at the far end of the decision-making continuum, which ranges from a highly rational style to an act-without-thinking extreme. Whereas rational decision-makers carefully consider beliefs about the consequences of their actions, impulsive decision-makers often fail to even consider such consequences, relying instead on cues that are salient in the immediate present (Buelow & Suhr, 2009).

The main contribution of the model of interpretation of pathological gambling that this study aims to verify is impulsivity as a predictor, but it also addresses the role of failure decision-making as mediator. According to Janis and Mann (1977), individuals are not rational calculators always tending toward the right decision, but may be beset by conflict and seeking relief by procrastinating, rationalizing, or denying responsibility for their own choices. Decision making starts with a challenge, which could be an event or communication conveying threats or opportunities. Confidence in a choice can be linked to the reasons people cite for their decision, with confidence being more realistic when people have.

considered both the reasons supporting and not supporting a specific decision. Unfortunately the search and justification processes can be faulty as people do not consider all the options, stopping at the first option that seems appropriate. In this sense, impulsivity may interfere with decision-making process related to gambling.

2. Aims of the study

On the basis of the aforementioned considerations, the principal aim of the present study was to test the fit of an explanatory model of risk that starts from dysfunctional impulsivity and passes through maladaptive decision-making strategies, culminating with pathological gambling. Previous studies have simply shown the presence, in pathological gamblers, of both maladaptive strategies of decision making and dysfunctional impulsivity. In this study, however, we sought to explore, in a group of regular gamblers, a model of mediation in which the predictive function of impulsive action on pathological gambling can be mediated by decision making. In other words, according to our hypothesis, pathological gambling could be related to an impulsive style of functioning that in turn would affect cognitive domains: these personal characteristics of personality and cognitive style would be considered what differentiate addicted gamblers from non-addicted gamblers. Interventions should aim to change pathological gamblers'

habitual functioning style by cultivating healthy reflection habits and focusing on long-term rewards.

3. Method

3.1. Procedure

The participants of the study were recruited in Betting or Bingo halls in three big cities of Italy. After obtaining their consent they were asked to complete a series of self-report questionnaires to measure impulsivity, decision making and gambling. Data were collected between December 2014 and February 2015. Research procedures described in this article respected the ethical norms for the research and were approved by the Italian Psychology Association.

3.2. Participants

Participants were 222 Caucasian young adults (53% males, $n = 116$) ages 20 to 24 ($M = 22.1$; $SD = 3.1$) recruited in Betting or Bingo halls. Gender and age were similarly distributed.

3.3. Measures

3.3.1. Impulsivity

The BIS-11 (Patton, Stanford, & Barratt, 1995) represents the latest effort by Barratt and colleagues to measure an impulsivity construct that is orthogonal to anxiety and is related to similar personality traits, such as extraversion and sensation seeking. The BIS-11 is made up of three subscales: attentional impulsiveness, motor impulsiveness, and non-planning impulsiveness. Patton et al. (1995) report internal consistency coefficients for the BIS-11 total score that range from 0.79 to 0.83 for separate populations of undergraduates, substance-abuse patients, general psychiatric patients, and prison inmates.

3.3.2. Decision making

The rationale for choosing The Melbourne Decision Making Questionnaire (MDMQ), a questionnaire developed by Mann, Burnett, Radford, and Ford (1997), is that we consider it as practical for clinical use and easy for participants to answer. It consists of 22 items concerning the four subscales for the coping styles: vigilance, hypervigilance, buck-passing, and procrastination. The items are answered on a three-point scale. The vigilance subscale is hypothesized to represent the most effective and rational coping strategy associated with moderate stress. The defensive subscales (buck-passing, procrastination, and hypervigilance) are hypothesized to represent less effective coping strategies, i.e., either avoidance or emotional excitement associated with severe emotional. The tests of reliability of subscales in different countries have shown the following Cronbach's alpha: vigilance 0.65–0.80; hypervigilance 0.61–0.74; buck-passing 0.77–0.87; and procrastination 0.70–0.81.

3.3.3. Gambling behavior

We administered the South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987), a 18 items' self-report questionnaire divided in two parts: the first part consisted of items (from 1 to 5) that give information on type of gambling and on related issues; the second part consisted of items (from 6 to 18) addressing information on the frequency of some behaviors linked to gambling. Scores on the SOGS are determined by adding up the number of questions which show an "at risk" response. The item of the first part is not counted for the score. Regarding the second part, some items can be scored more than once, so that the maximum score is 20. On the basis of gambling scores, we classified participants into three groups: (a) Low-risk gamblers (gambling score = 0–2; $N = 88$, 55 males, 33 females); (b) Problem gamblers (gambling score = 3–4; $N = 63$, 40 males, 23 females); and (c) Pathological gamblers (gambling scores > 5; $N = 100$, 47 males, 53 females).

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