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Short communication

The illusion of handy wins: Problem gambling, chasing, and affective decision-making

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ABSTRACT

Background: Chasing losses is a behavioral marker and a diagnostic criterion for gambling disorder. It consists in continuing gambling to recoup previous losses. Although chasing has been recognized playing a central role in gambling disorder, research on this topic is relatively scarce, and it remains unclear whether chasing affects decision-making in behavioral tasks in which participants gain or loss some money. Even if several studies found that the more the gambling involvement, the poorer the decision-making, to date no research investigated the role of chasing in decision-making.

Methods: The study aimed to first investigate the relation between chasing and decision-making in adult gamblers. One hundred and four VLT players were administered the South Oaks Gambling Screen (SOGS), a computerized task measuring chasing, and the Iowa Gambling Task (IGT).

Results: Correlation analysis showed that the higher the SOGS scores, the higher the propensity to chase, and the poorer the decision-making performance. Regression analysis revealed that chasing propensity and gambling severity predicted IGT performance. Mediation analysis indicated that the association between gambling severity and poor decision-making is mediated by chasing.

Limitations: Gambling severity was assessed by means of a self-report measure. The generalizability of findings is limited, since the study focused only on VLT players.

Conclusions: This study provides the first evidence that chasing, along with gambling severity, affects decision-making, at least in behavioral tasks involving money. Since chasers and non-chasers could be two different subtypes of gamblers, treatment protocols should take into account the additive role of chasing in gambling disorder.

1. Introduction

Chasing consists in continuing gambling to recoup previous losses (Lesieur, 1979). "The "chase" begins when a gambler bets either to pay everyday bills that are due or to "get even" from a fall" (Lesieur, 1984, p. 1). In broader sense, chasing refers both to gaining more or recouping lost money (e. g. Blaszczynski and Nower, 2002). However, since the house always wins, in the long run the inability to stop gambling might turn wins in losses. In such a case, chasing wins and chasing losses should be rather regarded as two sides of the same coin.

Chasing losses is a common phenomenon in gambling (e.g., McBride et al., 2010; O'Connor and Dickerson, 2003; Sacco et al., 2011), so that more than 75% of problem gamblers chase (Toce-Gerstein et al., 2003). Furthermore, chasing represents an important step in the development and maintenance of gambling disorder (Lesieur, 1984; Breen and Zuckerman, 1999; Goudriaan et al., 2014; see also Corless and Dickerson, 1989; Sharpe, 2002). Breen and Zuckerman (1999) introduced the distinction between within- and between-session chasing. The former involves returning on a later day to recoup lost money, whereas the latter refers to the tendency to gamble too long within a particular session (p. 1098).

To our best knowledge, only three studies measured chasing in gambling behavior using behavioral tasks. With the exception of Linnet et al. (2006), who measured episodic chasing within the IGT task, Breen and Zuckerman (1999), Lister et al. (2016) developed ad hoc procedures for estimating within-session chasing.

Though chasing has been recognized playing a central role in gambling disorder, experimental research on this topic is relatively scarce (for a review, see Lister et al., 2016). To some extent, this lack of interest is quite surprising, since some authors have hypothesized that chasing losses affects performance on decision-making tasks, such as the Iowa Gambling Task (IGT; Bechara, 2007; Bechara et al., 1994), in which participants gain or loss some money (Goudriaan et al., 2005; Linnet et al., 2006). It is common knowledge that the ultimate goal of

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the IGT is to maximize an initial virtual budget, by choosing cards from four different decks, where some decks are better or worse than others. Continuing to pick cards from disadvantageous decks in the hope of gaining more or recouping lost money, that is the inability to use rational decision-making during the IGT, may be, among others, a result of chasing proneness (Kertzman et al., 2011). If so, relative to non-chasers, chasers might perform worse on the IGT apart from gambling severity.

Although several studies found that pathological gamblers perform worse than healthy controls on the IGT (for a review see Wiehler and Peters, 2015), with the only exception of Linnet et al. (2006), who examined chasing behavior *within* IGT session, to date no study analyzed the role of chasing in IGT performance among gamblers using an independent behavioral measure of chasing proneness.

The aim of the present study was to first investigate the relation between chasing and decision-making in a sample of adult habitual gamblers. It was expected that poor decision-making would be associated not only with gambling severity, but also with chasing proneness.

2. Method

2.1. Participants

The sample was recruited from seven gambling venues, offering the same wide range of gambling activities and comprised 104 participants (76.9% males) aged between 18 and 70 years (M_{age} = 34.8; SD = 12). Participants were administered the South Oaks Gambling Screen (SOGS; Lesieur and Blume, 1987), the IGT, and a computerized task developed to measure chasing behavior. Since chasing task had two conditions (namely, control and loss), half of participants was randomly assigned to the control condition, the other half to the loss condition. Only regular VLT adult players who reported gambling once a week or more (i.e., habitual gamblers) were included in the sample. A quite low percentage of people contacted (about 28%) did not agree to participate in the study. Participants were tested on-site, in a quiet room made available by the management.

2.2. Measures

The SOGS is self-report instrument assessing the frequency and the gravity of gambling problems. The questionnaire is made up of 20 scored items and some unscored items. The total score ranges from 0 to 20. The unscored items request participants to indicate the frequency of participation in different gambling activities ("not at all", "less than once a week" or "once a week or more"), the largest amount of money gambled in 1 day, and parental involvement in gambling.

The IGT is a measure of affective decision-making. In the IGT participants make a series of choices from a set of four computerized decks of cards. The decks differ in terms of long-term outcome and punishment frequency. Playing mostly from disadvantageous decks (A and B) leads to an overall loss, while playing from advantageous decks (C and D) leads to an overall gain. Since in a standard administration of the task there are 100 trials, divided in five blocks of 20 cards, the most common method for scoring the IGT is to calculate Net scores from the five blocks of trials. The total score (Net Total) consist of the difference between the total number of cards selected from advantageous decks and the total number of cards select from the disadvantageous decks. A positive score indicates that decision-making performance was advantageous, whereas a negative one indicates that the decision-making performance was disadvantageous.

To measure chasing proneness a computerized task was developed by the first author on the experiment-generating package SuperLab (Version 4.2). The chasing task (ChasIT) simulates a card game in which participants played against the house. Each trial showed two covered playing cards. After participants had pressed any key, the face of the cards appeared on the screen, each reporting a number ranging from 1 to 9. Participants began with a 10 Euros credit. They were told they would win 1 Euro, if they had the highest card, but lose 1 Euro, if the house had the highest card. Furthermore, they were encouraged to treat the play budget as real money. For each of the first 30 trials participants received a positive ("You won 1 Euro!") or a negative ("You lost 1 Euro!") feedback. After 30 trials, participants were told that they had completed the first part of the task and were informed about the amount of money they had saved or lost with respect to the initial budget. The two blocks of wins and losses (15 and 15 in both sections of the control condition and 9 and 21 in the loss condition) were randomized, but the sequence was the same for all participants. In the control condition participants were informed that they saved the entire budget. In the loss condition participants were informed that they lost not only the entire budget, but also 2 Euros. Notwithstanding, participants were allowed to continue. In both conditions, participants could decide whether to continue or to stop the game. For the subsequent 30 trials, after each trial participants received the following feedback: "You won (or lost) 1 Euro! Now, your credit is X Euros. If you want to continue playing, please, press the key "M" on the computer keyboard. If you decide to stop playing, please, press the key "Z" on the computer keyboard". In the control condition the final budget was 10 Euros, in the loss condition minus 14 Euros.

Participants who decided to stop gaming were classified "non-chasers", whereas participants who decided to continue were classified "chasers". Since participants could continue playing up to the end, the highest chasing total score was 30.

Participants were tested individually in a quiet room at the gambling venue. The order of the two computerized tasks was balanced between subjects, whereas SOGS was administered in the interval between the two behavioral tasks. The ethics committee of the research team's university department approved the present study, and informed consent was obtained prior to enrolment.

3. Statistical analysis

Data were analyzed with the IBM Statistical Package for the Social Sciences, version 20.0. The alpha significance level was set at $p < .05$. Pearson correlation coefficients and partial correlations were calculated to examine the relationships among SOGS, IGT, and chasing total scores, as well as the associations between the score on the SOGS item related to chasing behavior (namely, item 4: "When you gamble, how often do you go back another day to win back money you lost?") and IGT and ChasIT total scores, respectively. Analysis of variance was used to assess mean differences on continuous variables. For comparing the profile of the IGT performances of chasers versus nonchasers per block we run a repeated measures ANOVA, with group as between-subjects factor and scores on the five subsequent IGT blocks as dependent variables. To reveal potential predictors of decision-making, we performed a hierarchical regression analysis with Net total score as the dependent variable, and gender, SOGS and chasing scores as independent variables. In order to control for the presence of multicollinearity, before interpreting the regression coefficients, we calculated the variance inflation factors (VIF), which were below the recommended cutoff of 10 (max. VIF = 1.434; Ryan, 1997). Finally, data were submitted to mediation analysis. The mediation model was tested with the SPSS macros for bootstrapping as provided by Preacher and Hayes (2004).

4. Results

Correlational analysis showed a significant negative association between chasing with Net scores ($r = -.45$; $p < .001$), and a positive one with chasing and SOGS scores ($r = .49$; $p < .001$). Not surprisingly, SOGS and Net scores correlated negatively ($r = -.35$; $p < .001$). No association was found between SOGS scores and age ($r = -.17$; $p =$