

**Adolescent gambling and impulsivity: Does employment during high school moderate the association?**

Natale Canale, \*

Department of Developmental and Social Psychology, University of Padova

Luca Scacchi,

Department of Human and Social Sciences, University of Valle d'Aosta, Aosta, Italy

Mark D. Griffiths,

International Gaming Research Unit, Psychology Division, Nottingham Trent University

\*Corresponding Author

Correspondence concerning this article should be addressed to:

Natale Canale, MSc

Department of Developmental and Social Psychology, University of Padova

Via Venezia, 15 -35121- Padova, Italy;

Phone. ++39 0498276401; Fax. ++39 0498278451

Email: [natalecanale4@gmail.com](mailto:natalecanale4@gmail.com)

## **Abstract**

The aim of the present study was to examine the potential moderating relationships between adolescent gambling and impulsivity traits (negative urgency, positive urgency, lack of premeditation, lack of perseverance and sensation seeking) with employment status. High-school students (N=400; 69% male; mean age=18.35 years; SD=1.16; past year gamblers) were surveyed to provide data on impulsivity and employment. Multiple linear regression analysis was applied to examine associations with gambling and related problems. Positive urgency was associated with stronger scores of both gambling frequency and problem gambling. Students in employment had substantially higher frequency of gambling and greater problem gambling. Moreover, the combination of having a job and low perseverance was associated with a particularly high frequency on gambling. These findings further support the importance of positive urgency and employment status in adolescent gambling. The study highlights unique moderating relationship between gambling and lack of perseverance with employment status. Youth with a low perseverance and having a job may have particular need for interventions to reduce gambling.

**Keywords:** Gambling; Impulsivity; Personality; High school; Employment; Adolescence; Problem gambling.

## **Introduction**

Youth problem gambling has become an emerging public health issue in many countries (Molinaro et al., 2014). It has been associated with significant psychosocial and health problems (Blinn-Pike, Worthy, & Jonkman, 2010), and a recent Italian study (Canale et al., 2016) estimated a past-year prevalence rate of 6.5% for problem gambling among students (aged 15-19 years) who reported gambling at least once in their life. Relatively recently, gambling disorder (formerly pathological gambling) was classified as a behavioral addiction by the American Psychiatric Association (Hasin et al., 2013). There are potential advantages from this reconceptualization (Petry, 2006). One benefit could result in a substantial increase in the study of gambling disorder from a variety of perspectives, including an examination of gambling disorder's personality correlates (Miller et al., 2013). Among the diverse etiological contributions of the personality correlates, impulsivity is one of the most robust characteristics associated with addictions (including gambling disorder). Impulsivity (i.e., the tendency to act rashly or without adequate forethought) has been consistently associated with pathological gambling (see MacLaren & colleagues 2011, for a recent review). Arguably, impulsivity has received the most attention, and has been found to increase the likelihood of gambling onset (Auger et al., 2010) and predict subsequent problem gambling (Vitaro, Arseneault, & Tremblay, 1999). In addition, impulsivity might be a predictor of both gambling frequency (Benson, Norman, & Griffiths, 2012) and gambling severity (MacLaren, Fugelsang, Harrigan, & Dixon, 2012).

The psychosocial mechanisms by which impulsivity might influence problem gambling are not clearly understood. Recent studies found that young people who tend to act rashly in response to extreme moods show higher enhancement and coping motives, which are, in turn, positively related to gambling problems (Canale, Vieno, Griffiths, Rubaltelli, & Santinello, 2015a). They were also more likely to have lower levels of deliberative decision-making and higher preferences for immediate/small rewards, which in turn were positively related to gambling problems (Canale, Vieno, Griffiths, Rubaltelli, & Santinello, 2015b). In explaining the potential effect of impulsivity

on gambling problems, these previous studies used possible causal factors related to individual characteristics (i.e., motives and decision-making processes), but other unconsidered factors associated with youth (i.e., environmental factors) may also explain the relationship between impulsivity and gambling problems.

According to the gene-by-environment effects (i.e., role of environmental factors in moderating genetic predispositions), Leeman and colleagues (2014) explored the moderating relationships between youth gambling and impulsivity/sensation seeking by adolescents with part-time jobs. One possible theoretical explanation for the relationship between work outside the home and problem gambling is that jobs provide funds that can be spent on gambling activities (Goldstein, Walton, Cunningham, Resko, & Duan, 2009). It has been reported that most young gamblers use their own money to gamble (Griffiths, 2002). It is known that individuals need to have and obtain money to be able to gamble. Evidently, having a job provides additional disposable income that can be used to gamble, and therefore has the potential to facilitate gambling behavior (Griffiths, 2002).

A key feature of emerging adulthood (in particular the years from the late teens through to the early to mid-twenties) is the period of life that offers the most opportunity for identity explorations in the areas of romantic relationships, work, and worldviews (Arnett, 2000). With regard to work, fewer than 20% of students (aged 16-29 years) work in Italy (Quintini, 2015). Most adolescents are employed in service' jobs (i.e., at restaurants, retail stores, etc.) in which the cognitive challenges are minimal and the skills learned are few (Arnett, 2000). Adolescents tend to view their jobs not as occupational preparation but as a way to obtain the money that will support an active leisure life (i.e., buying compact discs, concert tickets, restaurant meals, clothes, cars, travel, etc. (Shanahan, Elder, Burchinal, & Conger, 1996; Steinberg & Cauffman, 1995). In addition, life transitions that are related to assume adult roles and functioning (i.e., employment, living independently of parents) are associated with greater gambling involvement (Welte, Barnes, Tidwell, & Hoffman, 2008).

Although having a job may be a risk factor for adolescent gambling (Goldstein et al., 2009), no interaction between part-time job and impulsivity/sensation seeking in relation to gambling has been reported in previous studies among high school adolescents (Leeman, Hoff, Krishnan-Sarin, Patock-Peckham, & Potenza, 2014). One possible reason could be related to the sensation seeking and impulsivity measure (i.e., lack of premeditation and acting without thinking) used in the Leeman and colleagues' study that did not consider other dimensions such as lack of perseverance and urgency (Whiteside & Lynam, 2001). A refinement of impulsivity has reported several related – but also independent – dimensions (Whiteside & Lynam, 2001). For example, the UPPS-P Impulsive Behavior Scale (Cyders & Smith, 2007; Whiteside & Lynam, 2001) is one of the most employed measures of the impulsivity construct. The five UPPS-P impulsivity-related constructs have been identified (Cyders & Smith, 2007) as negative urgency, lack of persistence, lack of planning, sensation seeking, and positive urgency. Consequently, the present study considers the potential moderating relationships between gambling and impulsivity traits (negative urgency, positive urgency, lack of premeditation, lack of perseverance and sensation seeking) with employment status. It is hypothesized that relationships between impulsivity traits and gambling would be strongest among those adolescents with employment.

## **Methods**

### *Participants and procedure*

A total of 762 high school students participated in the study. Because the gambling scale used in the present study assessed gambling severity and gambling frequency over the past 12 months, only individuals who endorsed gambling activity in the year prior to the study were included in the analysis (50.6%). There were no differences in terms of age between non-past-year gamblers [ $M=18.24$  years,  $SD=1.26$ ] and past-year gamblers [ $M=18.35$  years,  $SD=1.16$ ],  $F(1, 761)=1.45$ ,  $p=ns$ ], and employment status [10.1% past-year gamblers had worked, 6.9% non-past-year gamblers had worked,  $\chi^2(1, 762)=2.92$ ;  $p=ns$ ]. As expected, there was a difference in terms of gender [ $\chi^2(1,$

762)= 50.06,  $p < .001$ ], with more past-year gamblers being male (42.7%) than non-past-year gamblers (27.1%), because gambling is more prevalent among males than females, especially during adolescence (i.e., Blinn-Pike et al., 2010). The analyses were tested on a final sample of 400 high school students (69% male; age range 16-21; mean age=18.35 years; SD=1.16) attending fourth and fifth grades of secondary school. A minority of the respondents (30%) were minors (i.e., younger than 18 years old). Ethical approval for the study was granted by the research team's university institutional review board. The data were collected via surveys, and completed on a voluntary basis in the school classroom. Informed consent and parental permission for minors to participate were obtained.

### *Measures*

*Impulsivity.* Impulsivity was assessed using the short UPPS-P scale (Billieux et al., 2012; Italian version: D'Orta et al., 2015), which comprises 20 items scored on a Likert scale from 1 (strongly agree) to 4 (strongly disagree), with four items per dimension: negative urgency ( $\alpha=.75$ , 95%CI [.71, .79]), positive urgency ( $\alpha=.72$ , 95%CI [.68, .76]), premeditation ( $\alpha=.79$ , 95%CI [.75, .82]), perseverance ( $\alpha=.82$ , 95%CI [.79, .85]), and sensation seeking ( $\alpha=.76$ , 95%CI [.72, .80]). The Italian short UPPS-P has a similar factor structure compared to other UPPS-P/short UPPS-P scales and has been shown to have good psychometric properties (D'Orta et al., 2015).

*Gambling Behavior.* Gambling behavior was assessed using the South Oaks Gambling Screen-Revised for Adolescents (SOGS-RA; Winters, Stinchfield, & Fulkerson, 1993; Italian version: Chiesi, Donati, Galli, & Primi, 2013). Previous studies shown that the Italian SOGS-RA screen is useful to assess at-risk and problem gambling for both genders in comprehensive youth surveys (e.g., Colasante et al., 2014; Chiesi et al., 2013). Participants were initially asked to indicate the *frequency of gambling* relating to eleven different gambling activities (i.e., instant scratch tickets, football pools, new slot machines and VLT, sport betting, poker, and card games). Participants indicated how often they engaged in each of these activities over the past 12 months (from “never”

to “daily”). The eleven questions had adequate internal reliability ( $\alpha = .83$ ; 95%CI=.81-.86). To counteract skewness, the gambling frequency variable was log-transformed according to procedures recommended by Tabachnick and Fidell (2001).

Following this, they were presented with 12 “yes-no” items to assess negative feelings and behaviours associated with gambling. The sum of these items is the total SOGS-RA score, referred to as the “narrow” criteria (Winters, Stinchfield, & Kim, 1995). There is a lack of consensus regarding appropriate cut-off scores for determining the problem gambling status of adolescents (e.g., Derevensky, Gupta, & Winters, 2003; Ladouceur, Ferland, Poulin, Vitaro, & Wiebe, 2005). Therefore, total SOGS-RA score served as the primary dependent variable. The internal consistency of the SOGS-RA was .75 (95%CI = .71/.78). To counteract skewness, the gambling problems variable was log-transformed according to procedures recommended by Tabachnick and Fidell (2001). Nonetheless, categorical definitions of adolescent problem gambling facilitate comparison across studies. In reporting past-year prevalence rates, Winters et al.’s (1993) original scoring system was used. A SOGS-RA score of 0-1 is labeled ‘no problem,’ 2-3 merits an ‘at-risk’ label, and 4 or more indicates ‘problem’ gambling. Following the standardized questionnaires of the European School Survey Project on Alcohol and Other Drugs (Hibell et al., 2012), a question regarding the number of gambling occasions (“On how many occasions [if any] have you bet money in the last 12 months?”) was also included. A past-year gambler was defined as anyone who had gambled at least once during the past 12 months.

*Employment status.* Participants reported their job status with the following single item: “Are you currently employed?” Participants indicated yes or no.

### *Statistical analyses*

To test for the possible contribution of impulsivity traits and employment status to gambling frequency and problem gambling, multiple linear regression analysis was applied. Model entry of

variables followed two steps with individual variables in the first step and interaction terms in the second step. In order to test for the two-way interactions of employment status with impulsivity traits, impulsivity traits were mean-centered to reduce possible collinearity with interaction terms.

## **Results**

### *Preliminary analyses*

In the sample, 285 participants (70.0%) had no gambling problems; 72 (18.0%) were at-risk gamblers, and 44 (11.0%) were problem gamblers. Regarding employment status, 19.3% of students worked in paid employment at the time of the survey. The highest correlation between variables included in the same model was between negative urgency and positive urgency ( $r = .58$ ,  $p < .001$ ). Consequently, correlations were not high enough to raise concern about collinearity.

### *Regression models for gambling frequency and gambling problems*

Results from the multiple regression analyses revealed that higher levels of positive urgency were associated with stronger scores of both gambling frequency and gambling problems (see Table 1). Students in employment had substantially higher frequency of gambling and greater problem gambling. Moreover, a two-way interaction was significant. The combination of having a job and a higher lack of perseverance was associated with a particularly high frequency on gambling (see Figure 1). This means that particularly among students who worked, there was a higher gambling frequency when having high lack of perseverance.

## **Discussion**

The present study provides new insight into the psychosocial mechanisms by which impulsivity traits might influence gambling. Among the dimensions of impulsivity, positive urgency was positively related to both gambling frequency and problem gambling. The finding that positive urgency predicts greater gambling problems supports the findings of previous research (Canale et



al., 2015a; Cyders & Smith, 2008; Fischer & Smith, 2008) which suggest that individual differences in problem gambling are directly associated with positive affect.

The present study suggests that employment status may be a risk factor for adolescent gambling. Students who worked were more likely to gamble in the past year and were more likely to report gambling problems compared with those who did not work. According to Goldstein and colleagues (Goldstein et al., 2009), it is possible that youth who work may have greater funds to spend on gambling, as well as greater exposure to older teens and young adults who may gamble than those who do not work at all. In addition, the present study found that students with higher levels of lack of perseverance and having a job were more likely than those without jobs to gamble. Youth with a low perseverance are highly susceptible to boredom and are unmotivated to succeed at work or in school and, therefore, may be easily distracted by an exciting activity (Thompson, Roemer, & Leadbeater, 2015), such as gambling. However, it is important to note that having a job can also be related with perseverance too. Perseverance may be a characteristic of youth that helps maintain a job during this developmental period.

A greater understanding of impulsivity and adolescent employment status differences in gambling problems might also elucidate important ways to explore in terms of developing and refining problem gambling prevention or intervention. Youth with a low perseverance and having a job may have particular need for interventions to reduce gambling. Although paid employment may be beneficial for some adolescents, intervention goals should involve (i) re-educating youth the value of money and (ii) educating families about the potential negative ramifications of paid job outside the home.

The findings of the present study must be understood in the context of the study's limitations. First, the prevalence of problem gambling in this study was substantially higher (11%) than reported in the recent Italian study of adolescents (Canale et al. 2016). However, the present study comprised a non-representative convenience samples (i.e., individuals who endorsed gambling activity in the year prior to the study) and it is possible that this generated a higher

problem gambling prevalence rate compared to that carried out with a nationally representative sample.. Examining these relationships in a replication studies using independent samples would allow for a clearer understanding of the association between impulsivity traits, employment status, and gambling outcomes..

Second, other limitations of the present study include the use of cross-sectional self-report data, small sample size, and a one-item measure of employment. Although the single item on employment status has utility (Leeman et al., 2014), other information related to the work should be considered in future studies (e.g., number of hours worked, amount of money earned, type of occupation employed in, etc.). In addition, it is possible that some students may have had employment at some point during the past year but they were not in employment at the time they completed the survey. Third, although this study considered the role of impulsivity traits, employment status, and adolescent gambling, no other impulsive behavior was included and controlled for in the study. Thus, future studies may benefit from asking about other impulsive behaviors (e.g., drug use) because other impulsive behaviors may have potentially influenced the results found in the present study. Despite these limitations, the present study is the first to demonstrate the moderating effect of adolescent employment status on the relationship between impulsivity traits and gambling frequency.

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