

PSYCHOLOGICAL VARIABLES CHARACTERIZING DIFFERENT TYPES OF ADOLESCENT GAMBLERS: A DISCRIMINANT FUNCTION ANALYSIS

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Abstract

Objective: The study examined the effects of attachment attitudes, social support, and psychological and behavioral problems on pathological gambling among adolescents.

Method: A total of 268 male adolescents from 15 to 17 years of age ($M = 16.23$, $SD = .39$) completed self-report measures on gambling behaviors, attachment styles, social support, and internalizing and externalizing problems.

Results and Conclusions: At-risk and pathological gamblers reported lower level of social support and higher level of fearful attachment and internalizing problems than non-problematic gamblers. Results from a discriminant function analysis, in which two discriminant functions emerged, were consistent with contemporary perspectives on personality functioning: in fact, it resulted that the difference between non-gamblers and at-risk gamblers was better explained by a function named “self-in-relation”, which included internalizing problems, fearful attachment, lack of security and low perceived support, whereas the difference between at-risk gamblers and pathological gamblers was better explained by a function named “self-definition”, which included externalizing problems and preoccupied attachment. Therefore, findings of this study suggest that more severe gambling behaviors in adolescence are associated with needs for self-definition. This can have important implications for the assessment and treatment of adolescent gamblers.

Key words: gambling disorder, attachment, perceived support, personality

Declaration of interest: none

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Introduction

Gambling Disorder (GD) occurs when a person is unable to resist impulses to gamble, which can lead to negative effects on the person's job, relationships, mental health, and other important aspects of life. Individuals may continue to gamble even after they have developed social, economic, interpersonal, or legal problems as a result of gambling (Ashley and Boehlke 2012). The current version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; APA 2013) includes GD in the section dedicated to substance-related and addictive disorders. This classification has its theoretical rationale in the consideration that gambling behaviors “activate reward systems similar to those activated by drug abuse and produce some behavioral symptoms that are comparable to those produced by the substance use disorders” (APA 2013, p. 481). In fact, symptoms of tolerance, withdrawal and craving—which are at the core of pathological dependencies—are observed in both substance and behavioral addiction (Pilver et al. 2013); moreover, it was observed that people suffering from different addictive behaviors, irrespective of the

specific type of their addiction, may show similarities with respect to factors such as developmental patterns, problem behaviors, and ways of processing thoughts and feelings (Schimmenti and Caretti 2010). Therefore, the classification of GD in the substance-related and addictive disorders in the DSM-5 is considered by many researchers and clinicians a theoretical advance with respect to the previous version of the DSM (e.g. DSM-IV-TR; APA 2000), in which GD was only considered an impulse control disorder, i.e. a disorder characterized by impulsivity (failure to resist a temptation, urge, or impulse that may harm oneself or others).

To meet DSM-5 criteria for GD, a person must show four or more of the symptoms described below. He/she: (1) needs to gamble with increasing amounts of money in order to achieve the desired excitement; (2) is restless or irritable when attempting to cut down or stop gambling; (3) has made repeated unsuccessful efforts to control, cut back on, or stop gambling; (4) is often preoccupied with gambling (e.g., having persistent thoughts of reliving past gambling experiences, handicapping or planning the next venture, or thinking of ways to get money with which to gamble); (5) often gambles when feeling

distressed (e.g., helpless, guilty, anxious, or depressed); (6) after losing money gambling, often returns another day to get even (“chasing” one’s losses); (7) lies to family to conceal the extent of involvement with gambling; (8) has jeopardized or lost a significant relationship, job, or educational or career opportunity because of gambling; and/or (9) relies on others to provide money to relieve a desperate financial situation caused by gambling.

Research has shown that GD is more prevalent among males (Blanco et al. 2006), with temperamental and neurocognitive correlates of GD (such as the higher activation of the impulsive, amygdala-striatum-dependent neural system that promotes habitual and salient behaviors in males, or the higher levels of anxiety in females) underpinning gender differences (Grant et al. 2012, Noël et al. 2013). Moreover, as often happens with other forms of substance and behavioral addiction (Guzzo et al. 2013), adolescence can be seen as a critical life stage where gambling behaviors develop and can become pathological (Tozzi et al. 2013). This probably occurs because adolescence is a period of transition characterized by spurts of physical, cognitive, emotional, and social changes (Erikson 1968), in which mental representations of past experiences and current social experiences combine to determine risk or protective developmental pathways (Guzzo et al. 2014, Pace and Zappulla 2013).

In the clinical framework, it has been proposed that attachment theory (Bowlby 1969/82) can help to elucidate the development of addictive behaviors (Flores 2004). Attachment refers to the inbuilt ability of humans to form bonds of love and affection toward significant others. It is a motivational system that plays a significant role in every period of life, determining how individuals seek protection from danger and threats; the attachment system leads the individual to seek a safe haven and a secure base within close relationships, as a support for emotional regulation and coping with stress and problems, and this is a part of the biological endowment of our species that allows it to continue over time (Diamond and Marrone 2003).

Addictive behaviors can be seen in this framework as an attachment disorder (Flores 2004, Schimmenti et al. 2012) and as an attempt at self-regulating and self-soothing (Khantzian 1997, Schimmenti and Caretti 2010). If one feels unlovable and neglected and has developed a negative self-concept because of negative relationships during childhood, he or she can try to avoid rejection, constraints of closeness, and mistrust by developing an addictive behavior. If this is the case, attachment needs are shifted to a drug, an impersonal object, an activity, or a specific behavior that can then become addictive, thus preventing the individual from feeling further hurt and rejected (Hofler and Kooyman 1996).

Research with pathological gamblers supports these observations. For example, in an early study on the topic, Eisen and colleagues (1998) found in a large twin study that familial factors explained 62% of the variance of pathological gambling; McCormick and colleagues (2012) showed that GD is clearly related to childhood relational trauma; Grant and Kim (2002) found a high prevalence of neglectful parents among adolescent pathological gamblers; Magoon and Ingersoll (2006) found that increased parental attachment was associated with decreased levels of adolescent gambling, while decreased parental trust and communication resulted in increased problem gambling; another representative study (Luder et al. 2010) showed that youth suffering from GD reported fewer social supports, in terms of

reliable people among friends and family, and their lack of social support was related to an increased psychological distress; Carlbring and colleagues (2012) showed that one of the most effective results of psychotherapy for GD is an increase of social support and the development of new relationships perceived as protective.

On the basis of the above mentioned research, this study aimed to examine the effects of attachment styles, social support, and psychological and behavioral problems on pathological gambling among adolescents. Specifically, we hypothesized that insecure attachment styles and reduced social support would be related to gambling behaviors, with different levels of pathological gambling discriminated by specific attachment-related approaches to interpersonal relationships and concurrent psychological problems.

Method

Procedure

To recruit participants, we employed a “passive” consent procedure, sending letters to the parents to inform them about the nature of the study and to provide them the opportunity to call our research office if they did not want their child participating in the study. None of the parents nor the children objected to involvement in the study. Participants completed self-report measures on gambling behaviors, attachment, social support, and problem behaviors in their classroom. Researchers collected data during school visits conducted between November 2011 and March 2012. This research respected the ethical norms of the research (COPE).

Participants

We selected the participants from a larger study (initially $N = 1,158$) conducted in several secondary schools located in different cities of Italy. All participants completed self-report measures on gambling behaviors, attachment, social support, and problem behaviors, and provided also demographic information by means of a brief list of questions. On the basis of the self-report measure on gambling behavior, we classified the participants into three groups: (a) No gamblers ($N = 978$; 449 boys, 529 girls) (b) At-risk gamblers ($N = 107$; 98 boys, 9 girls), (c) Pathological gamblers ($N = 73$; 70 boys, 3 girls). Because girls in the gamblers’ groups were very few, we decided to remove them from the sample and to conduct the study only on boys. Moreover, because the group of students who did not gamble was much larger than the other groups, we drew a random samples of 100 subjects from this group. The final sample for the study comprised 268 male adolescents from 15 to 17 years of age ($M = 16.23$, $SD = .39$).

Measures

Gambling behavior. We administered the South Oaks Gambling Screen (SOGS; Lesieur and Blume 1987), a 16-items self-report questionnaire that addresses the issues of frequency (e.g. When playing the game of chance and lose, how often return the next day to try to win the amount lost?), to which adolescents could answer “always” or “often” (scored 1) or “sometime”

or “never” (scored 0), and type of gambling behavior (e.g. Have you ever gambled more than you wanted?), to which adolescents could answer “yes” (scored 1) or no (scored 0). A total score was obtained by summing the single scores, with higher scores indicating higher levels of problem gambling. This measure allows to classify participants into three groups: Non problematic (0 to 2 scores); At-risk (3 to 4 scores), and Pathological (scores of 5 or more) gamblers.

Attachment. We administered the Relationship Questionnaire (RQ; Bartholomew and Horowitz 1991), a short instrument containing multi-sentence descriptions of each of four attachment styles: (a) Secure (“It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depending on me. I don’t worry about being alone or having others non accept me”); (b) Dismissing (“I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me”); (c) Preoccupied (“I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don’t value me as much as I value them”); (d) Fearful (“I am uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to others”). Adolescents were asked to choose the description that best characterized them and then to rate each description according to how well it described them, on a 7-point Likert scale ranging from 1 (*not at all like me*) to 7 (*completely like me*). The choice of the description allowed to assign each individual to an attachment category. The rating of how well each description described each participant allowed to obtain a score for each attachment style.

Perceived support. We administered the six-item short form (SSQ6; Sarason et al. 1987) of the Social Support Questionnaire (SSQ; Sarason 1983) to assess adolescents appraisal of the support that might be available to them. Each item (e.g., “Whom can you really count on to distract you from worries when you feel under stress?”) has two parts, one asking about people whom the adolescents can count on for help or support, the other asking to rate how satisfied (from 1 = very dissatisfied to 6 = very satisfied) adolescents are with the support received. Higher scores indicate higher levels of perceived support. Cronbach’s alpha in

this study was .82.

Internalizing and externalizing behaviors. We administered the Youth Self-Report (YSR; Achenbach and Edelbrock 1987) to assess adolescents’ internalizing and externalizing behavioral problems. The measure consisted of 113 items (e.g., on internalizing problems, “I feel often sad and unhappy”; e.g., on externalizing problems, “I do things that can get me into trouble with law”) to which adolescents were asked to answer on a 3-point scale, ranging from 1 (*not at all true*) to 3 (*often true*). Two separate scores were obtained for the two behavioral dimensions, with higher scores indicating, respectively, greater levels of internalizing problems and externalizing problems. Confirmatory factor analyses performed on the translated version of the YSR confirmed the original structure with two factors, internalizing (37 items; Cronbach’s alpha = .71) and externalizing (33 items; Cronbach’s alpha = .74). A weighted sum (weighted by the number of items in each scale) of internalizing and externalizing problems was computed for each participant, with higher scores indicating higher levels of problem behaviors.

Statistical analyses

We conducted preliminary analyses, including descriptive statistics on all the variables. To assess differences in attachment, social support and internalizing and externalizing problems as a function of gambling we conducted a multivariate analysis of variance (MANOVA). We considered gambling behavior groups (non gamblers versus at-risk gamblers versus pathological gamblers) as the fixed factor while the attachment, social support and internalizing and externalizing scores as the dependent variables. Univariate analyses of variance (ANOVA) and post-hoc comparison (Sheffé’s test), with alpha level set at $p < .05$, following MANOVA were carried out to examine group differences. A discriminant function analysis was conducted to determine which variables best discriminate between the three groups (non gamblers versus at-risk gamblers versus pathological gamblers).

Results

Descriptive analyses for all the variables are presented in **table 1**. As described in the method section, participants of the study were selected from a larger group according to their SOGS scores to maximize the

Table 1. Descriptive statistics

	M	SD	Observed range	Possible range
Relationship Questionnaire				
Secure Attachment	4.85	.56	1-7	1-7
Fearful Attachment	3.09	.55	1-7	1-7
Preoccupied Attachment	3.35	.50	1-7	1-7
Dismissing Attachment	3.03	.74	1-7	1-7
Social Support Questionnaire				
Social support	3.26	.54	1.50 - 4.00	1-4
Youth Self-Report				
Internalizing problems	1.46	.54	.09 - 3.00	0-3
Externalizing problems	1.12	.55	.19 - 2.57	0-3
South Oaks Gambling Screen				
Gambling behaviors	2.83	.67	0 - 13	0-16

variance of gambling scores across subgroups, thus descriptive statistics at the SOGS are not informative and they cannot be generalized; however, the range of scores on the other investigated variables immediately suggested that different levels of attachment styles, social support, and internalizing and externalizing problems could be found among participants. Because we hypothesized that these possible differences were related to gambling behaviors, we conducted a MANOVA.

The MANOVA exploring group differences (non gamblers/at-risk gamblers/pathological gamblers) in relation with attachment, social support and internalizing and externalizing problems showed significant differences between the groups [Wilks' Lambda = .87, $F(14, 518) = 3.70$, $p < .000$]. Univariate follow-up analyses (table 2) indicated main effects of gambling groups for secure attachment, fearful

between the three gambling groups (see table 3). Two significant functions emerged [$\chi^2(14) = 50.37$, $p < .000$; $\chi^2(6) = 13.14$, $p < .04$]. The first function accounted for most of the variance (75%). Structure matrix (table 3) shows that Function 1 was principally explained by four variables: internalizing problems, fearful attachment, (lack of) secure attachment and (low) perceived support. This function was named "self-in-relation", since it fits very well with Blatt's description (2008) of a depleted-anaclitic pole in the relational needs of individuals; on the contrary, Function 2 was principally explained by two variables: externalizing problems and preoccupied attachment. This function was named "self-definition", as in Blatt's description of a personality pole characterized by needs of definition and entitlement in the relationship with other individuals and the social world, as it will be better described in the discussion section.

Table 2. Mean and standard deviations reported on attachment, social support and internalizing and externalizing problems by adolescents in the three gambling groups

	No Gamblers (N = 100) M (SD)	At-risk gamblers (N = 121) M (SD)	Pathological Gamblers (N = 61) M (SD)	$F_{(2,265)}$
Secure attachment	5.10 (.42) ^a	4.36 (.72) ^b	5.01 (.62) ^a	6.67**
Fearful attachment	2.85 (.42) ^a	3.53 (.72) ^b	3.29 (.56) ^b	6.55**
Preoccupied attachment	3.31 (.46)	3.24 (.62)	3.66 (.46)	1.85
Dismissing attachment	2.98 (.53)	3.11 (.87)	3.04 (.11)	.19
Social support	3.48 (.86) ^a	3.18 (.57) ^b	3.11 (.63) ^b	3.80*
Internalizing problems	1.31 (.52) ^a	1.63 (.64) ^b	1.56 (.86) ^b	10.14***
Externalizing problems	1.11 (.55)	1.09 (.54)	1.19 (.68)	.78

Note: For each row, means with different apexes differ significantly from each other, with $\alpha < .05$.

* $p < .05$, ** $p < .001$, *** $p < .0001$

Table 3. Multiple discriminant function: Structure matrix

	Function 1 Self-in-relation	Function 2 Self-definition
Scale/variables		
Internalizing problems	.66 ^a	.46
Fearful attachment	.57 ^a	.09
Secure attachment	-.52 ^a	-.43
Social support	-.35 ^a	-.24
Externalizing problems	-.05	.52 ^a
Preoccupied attachment	-.04	.33 ^a

^a Largest absolute correlation between each variable and discriminant functions.

attachment, social support, and internalizing problems. Post-hoc comparison (Sheffe test), with alpha level set at $p < .05$, showed that at-risk gamblers reported lower levels of secure attachment than non gamblers and even pathological gamblers. Also, in comparison with no gamblers group, the at-risk gamblers and the pathological gamblers had higher levels of fearful attachment and internalizing problems and lower levels of perceived social support. No differences between groups were found in the other variables.

A discriminant function analysis was conducted to determine the variables that enabled to differentiate

An evaluation of the group centroids showed that Function 1 best separates not gamblers from at-risk gamblers, better describing the at-risk group, whereas Function 2 best differentiate at-risk gamblers from pathological gamblers, better describing the pathological gamblers' group.

Discussion

The principal aims of the present study were to focus on gambling behavior among Italian adolescents

and to evaluate the role that individual dimensions, such as quality of attachment, perceived social support, and behavioral problems, play in discriminating between gambling patterns.

Preliminary data on a larger sample of 1,158 students showed that 84.5% of adolescents were classified as non-gamblers, 9.5% as at-risk gamblers, and 5.5% as pathological gamblers. The prevalence of gambling behaviors in the current study is in line with other studies using a similar age sample (Thomas et al. 2009). Furthermore, males were more likely to be classified as at-risk or pathological gamblers than females. The data, which are consistent with other studies, confirmed that gambling is indeed widespread among adolescents, especially among males. The low presence of girls in the groups made us desist from further analysis on the entire sample. For this reason, data on girls were deleted, and groups of males were compared based on their gambling behaviors. The univariate and multivariate analysis of variance showed that adolescent gamblers differ from non gamblers in terms of quality of attachment, perceived social support, and level of problem behaviors, specifically internalizing problems. More in detail, results indicated that at-risk and pathological gamblers reported higher level of fearful attachment and internalizing problems, and lower levels of perceived social support, with respect to non-problematic gamblers.

These data can be considered in line with recent literature findings that have extensively illustrated the role played by a negative quality of attachment at the onset of general maladaptive conditions of development (Sloman et al. 2003). In particular, recent research has evidenced that insecure attachment is linked to general problem behaviors (Marcus and Betzer 1996) and high levels of dependency to psychotropic substances and maladaptive behaviors, such as gambling (Moffitt 1993). A possible explanation for this association has been detected in the propensity of insecure attachment to play a role in the cognitive appraisal of stress during the frequent stressful events that characterize adolescents' lives. The inclination to evaluate negative experiences as caused by one's own shamefulness, which is the typical condition of those adolescents who have maladaptive internal working models of themselves, may lead adolescents to seek a retreat in risky or problem behaviors, such as gambling. Within these activities, impulsivity and sensation-seeking become central attractions for those adolescents who are not able to release their emotions in the social arena in which their peers are daily involved.

Social support was found to act as a protective factor, indicating that a lack of support may increase the propensity to engage in risky or pathological behaviors such as gambling. Unwillingness to seek support during adolescent development therefore represents an additional risk factor that may amplify behaviors of gambling; as expected, a higher level of social support was found among adolescents belonging to the non-gambling group, confirming the relevant buffer role of the emotional network in decreasing levels of emotional problems during this stage of life (Cacioppo et al. 2013, Helsen et al. 2000).

In this sense, the results of the discriminant function analysis showed that the difference between non-gamblers and at-risk gamblers is better explained by a function we named "self-in-relation". In fact, all the variables included in this function (internalizing problems, fearful attachment, secure attachment and perceived support) showed interpretable correlations to the function and fit particularly well with Blatt's

description (2008) of an anaclitic-introjective pole in the relational needs of individuals that is characterized by feelings of mistrust, emptiness, loneliness, inefficacy, and desire for company. Therefore, it is likely that gambling behaviors among at-risk participants are intended as a way to counteract disturbing feelings of anxiety and depression through absorption with the gambling activities and consequent temporary suspension of reality testing, a dissociative mechanism also observed in other non-substance-related addictive disorders such as Internet addiction (Schimmenti 2012; Schimmenti et al. 2012).

On the contrary, the difference between at-risk gamblers and pathological gamblers in this study was better explained by a function we named "self-definition". Two variables were specifically discriminant in explaining this function: these were externalizing problems and preoccupied attachment, although results of the analysis suggest that among pathological gamblers, even internalizing symptoms and lack of secure attachment may play a significant role. Overall, this function shows an adequate fit with Blatt's description of a personality pole characterized by ambivalent attitudes on closeness, extratensive approach to social world, craving attention from others, and need for recognition and entitlement that can lead the individual to act out provocative behaviors. In this case, it is likely that a wider constellation of developmental problems are involved that lead the individuals to impulsive-compulsive behavioral responses (Hollander 1993). These are often linked with personality traits such as sensation-seeking and the use of primitive defense mechanisms such as acting out, in a clinical frame characterized by higher levels of affect dysregulation.

In fact, the self-in-relation versus self-definition dimension is considered a deep-structure tension that individuals tend to resolve in one direction or the other. It has been found to discriminate between patients at all levels of psychological health, and to have crucial implications for the understanding and treatment of many disorders (Blatt 2008, Morse et al. 2002, PDM Task Force 2006).

The study has several limitations that need to be addressed. First, all the information was collected by self-report measures; that is, the accuracy of individual reporters cannot be assured, although the measures of gambling behaviors, attachment styles, social support, and internalizing and externalizing problems used in this study have demonstrated good psychometric properties. Further studies designed for testing the effects of the investigated variables on pathological gambling among adolescents should include a multimethod assessment of both gambling behaviors and the other variables. Second, the cross-sectional design of the study cannot allow one to exclude the possibility that the differences between the subsamples of non-gamblers, at-risk gamblers, and pathological gamblers were affected by further factors that were not explored in this study (e.g., socioeconomic status or genetic factors), and longitudinal research is necessary to identify complex psychological pathways responsible for the development of GD among adolescents. Finally, it is important to emphasize here the crucial distinction between a screening for gambling behaviors and a clinical diagnosis of GD, which requires in-depth interviews. However, this study also has some important strengths, including the relative homogeneity of the gambling behavior subsamples, produced by the initial screening, and the exploration of concurrent psychological and behavioral problems

among the participants. Most importantly, this study has relevant clinical implications. Indeed, findings of the study suggest that gambling behaviors among adolescents are related with insecure attachment styles, low social support, and a high degree of psychological and behavioral symptoms, showing that these variables might be implicated at different levels on gambling behavior. This can positively inform future research and treatment.

Conclusions

The results of this study may offer new insights to the efforts of researchers and clinicians in better understanding and addressing the psychological difficulties of adolescents suffering from gambling behaviors.

Our findings supported the hypothesis that insecure attachment styles and low social support play a significant role in the onset and maintenance of pathological gambling; therefore, clinicians working with adolescent gamblers may wish to consider the degree of attachment insecurity and lack of social support together with other concurrent psychological and behavioral symptoms of these adolescents. This can also help clinicians to better address how the adolescents cope with problems and feelings, fostering a therapeutic alliance and a sense of social support in patients. Also, when adolescent patients show problems with self-definition and more severe gambling behaviors, clinicians must be aware that serious difficulties with affect regulation may be involved and may produce further impulsive-compulsive behaviors and externalizing symptoms. Therefore, it is likely that interventions based on symptom control and development of self-regulation abilities would be more effective with these adolescents.

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