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Articles

Attachment dimensions and adolescent gambling: The mediating role of mentalization

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Abstract

Background: Several studies demonstrated that insecure attachment style represents a risk factor for gambling behavior. The recent literature strongly argues that attachment could be better described as a dimensional construct, in as much as variations in attachment seem to exist on a graded continuum rather than in categories, better grasped by dimensional models. However, only a few studies have investigated the role of specific attachment dimensions in adolescent gambling. Moreover, even if the role of attachment style on mentalization abilities and their influence on gambling are well established, no studies have so far investigated how attachment dimensions and mentalization interact each other in influencing gambling behavior. The present study was aimed to clarify the role of specific dimensions of attachment in adolescent gambling and to explore, for the first time, the causal relationships between attachment, mentalization, and adolescent gambling.

Methods: Four hundred and eighty-two adolescents aged 16-20 years were administered the South Oaks Gambling Screen Revised for Adolescents (SOGS-RA), the Attachment Style Questionnaire (ASQ), and the Reflective Functioning Questionnaire (RFQ-8).

Results: The results of the hierarchical linear regression analysis showed that high scores on Uncertainty about mental states (RFQ-8) and Preoccupation with relationships (ASQ) were significant predictors of gambling severity. Moreover, mediational analysis revealed that the effect of Preoccupation with relationships on gambling severity was totally mediated by Uncertainty about mental states.

Conclusion: The present study provided, for the first time, insight into the interrelationships between attachment dimensions, mentalization, and gambling severity, and suggested that preoccupation with relationships may be an important precursor to gambling and support the hypothesis that adolescents preoccupied with relationships have more severe gambling involvement due to poor mentalization abilities. Theoretical and clinical implications are discussed.

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1. Introduction

Problematic gambling represents an emergent issue in public health among adolescents and young adults (Andrie et al., 2019; Calado et al., 2017a). Although adolescents gamble less than adults, European adolescents show highest prevalence of at-risk or problem gambling worldwide (Calado et al., 2017a; ESPAD Group, 2020), with percentages ranging from 0.2 to 12.3%. These data highlight the need to better delineate the mutual influences among risk factors of problematic gambling behavior in adolescence, in order to prevent gambling addiction.

Among the risk factors for gambling, there is some evidence that the family characteristics, in terms of relationships among members and family members' attitudes and behaviors, are associated with adolescent gambling behavior (Casey et al., 2011; Dowling et al., 2017; Kalischuk et al., 2006; McComb & Sabiston, 2010) and that attachment style could be considered as a relevant psychological predisposition to problematic gambling (Calado et al., 2017b; Estevez et al., 2017; Magoon & Ingersoll, 2006; Pace et al., 2013; Terrone et al., 2021). Most of the studies that have so far investigated the relationship between attachment style and gambling behavior have adopted a categorical approach to the assessment of attachment (Di Trani et al., 2017; Gori et al., 2021; Keough et al., 2018; Pace et al., 2013) or have focused on a specific figure of attachment (i.e., peers, mother, father) (Estevez et al., 2017; Jauregui & Estévez, 2020; Magoon & Ingersoll, 2006). Studies having adopted a categorical approach to attachment showed that insecure attachment style significantly predicted gambling severity (Gori et al., 2021), with higher prevalence of fearful attachment style among problematic gamblers (Di Trani et al., 2017; Keough et al., 2018; Pace et al., 2013). Specifically, insecure attachment towards both peers and parents was found to be a significant risk factor for problematic gambling involvement (Estevez et al., 2017; Jauregui & Estévez, 2020; Magoon & Ingersoll, 2006).

Although the first operationalization of individual differences in attachment used a categorical approach (Ainsworth et al., 1978), the recent literature strongly argues that the adult attachment could be better described as a dimensional construct (Fraley & Waller, 1998), since "individual differences in attachment quality appear to be a matter of degree rather than kind" (Raby et al., 2021, p.74). Variations in attachment seem to exist on a graded continuum rather than in categories, better grasped by dimensional models (Raby et al., 2021). In addition, the categorical approach to attachment entails several controversial issues that the dimensional approach helps to disentangle. First, it assumes that each individual falls into a single category of attachment

style, while several studies observed that the same individual usually reported high scores on different categories of attachment (e.g., Brennan et al., 1998; Feeney, 1991; Fraley & Waller, 1998). Second, it assumes that the attachment style is stable over time, whilst different studies demonstrated that the attachment style can change in response to important experiences (e.g., Keelan et al., 1994; Kirkpatrick & Davis, 1994). Finally, studies having used a taxometric technique demonstrated the higher statistical power of the dimensional approach to the assessment of attachment, as compared to the categorical one (Fraley et al., 2015; Raby et al., 2021).

Bartholomew (1990; Bartholomew & Horowitz, 1991) was the first to introduce a taxonomy of adult attachment with four mutually exclusive adult attachment styles (i.e., secure, preoccupied, dismissing, and fearful) deriving from the intersection of two underlying dimensions: the “model positivity of the self” and the “model positivity of the others”. This taxonomy represented an attempt to overcome the categorical approach, while still maintaining the categorical classification. Contrarily, Feeney and colleagues (1994) proposed an assessment of the adult attachment through five dimensions, not necessarily representative of higher order categories, but rather uniquely measuring the prevalence of each specific dimension on a continuum. The proposed dimensions were confidence, discomfort with closeness, need for approval, preoccupation with relationships, and relationships as secondary. One of the main strengths of this model is that, while comprising categories attributable to existing three- and four-categories attachment models (Bartholomew, 1990; Hazan & Shaver, 1987; Mikulincer & Shaver, 2007), it can capture the dimensions underlying attachment styles, making the attachment measurable even in people without experience in romantic relationships. In fact, many self-report measures of the adult attachment focused on romantic relationships (e.g., the Experiences in Close Relationship Scale [ECR], Brennan et al., 1998; the Relationships Style Questionnaire [RSQ], Griffin & Bartholomew, 1994; the Adult Attachment Questionnaire [AAQ], Simpson, 1990), precluding the investigation of attachment in people without romantic relationships, including young people.

To the best of our knowledge, only a few studies have considered the role of specific dimensions of attachment styles in the onset and maintenance of gambling addiction, with no homogeneity in methods used and results obtained (Calado et al., 2017b; Chimienti & De Luca, 2012; Terrone et al., 2021). Terrone and colleagues (2021) investigated the attachment representations of adolescents using a semi-structured interview with a coding system that comprises both attachment classifications and dimensional scores across several domains. Results revealed that the dimension named “theory of mind toward one’s own best friend” is one of the mediators

in the relationship between insecure attachment and gambling problems (Terrone et al., 2021). Calado and colleagues (2017b) assessed adolescent attachment relationships with an adult figure on three continuous dimensions, i.e., angry distress, availability, and goal-corrected partnership. They found that the angry distress dimension (i.e., “anger toward attachment figures when attachment needs are frustrated”; Calado et al., 2017b, p. 650) exerts an effect on youth problem gambling, which is mediated by coping styles. Chimienti and De Luca (2012) were the first to investigate the role of attachment dimensions in gambling as proposed by Feeney and colleagues (1994) and found higher levels of relationship as secondary and lower levels of confidence in pathological gamblers, as compared to controls.

The first attachment relationships represent the context within which individuals develop different psychological abilities that allow to respond favorably to subsequent risk factors that they might experience over time (Bizzi & Pace, 2019; Black-Hughes & Stacy, 2013; Borroni et al., 2022; Craparo et al., 2018; Stacy, 2004, 2006). Mentalization is one of these abilities (Fonagy et al., 2007; Fonagy & Target, 1997; Gambin et al., 2020; Humfress et al., 2002; Hunefeldt et al., 2013; Meins et al. 1998) and is defined as the ability to perceive and interpret both self and others' behaviors in terms of intentional mental states, i.e., thoughts, feelings, desires, wishes, goals, and attitudes (Fonagy et al., 2012). Many studies demonstrated that a secure attachment style provides the optimal context for children to develop and improve their mentalizing skills (Bateman & Fonagy, 2004; Fonagy & Bateman, 2006, Gambin et al., 2020), whereas an insecure relationship with caregiver predicted poor abilities to mentalize in adolescence (Humfress et al., 2002; Hunefeldt et al., 2013), creating significant vulnerabilities in the context of social relationships (Fonagy & Campbell, 2016) and mental health (e.g., Fischer-Kern et al., 2013; Fonagy et al., 1996). In fact, a genuine mentalization is “a prerequisite for emotion regulation, leading to higher levels of adaptive strategies and a decrease in the use of maladaptive emotion regulation strategies” (Schwarzer et al., 2021, p. 40). In other words, mentalization is a prerequisite for adaptive emotion regulation, which is an important aspect of mental health in general (e.g. Beauchaine & Cicchetti, 2019; Beauchaine & Crowell, 2019), so acting as a protective factor for mental disorders (Schwarzer et al., 2021).

Furthermore, mentalization impairments could have important implications for the mental health, exposing to the risk of developing substance or behavioral addictions (e.g., Handeland et al., 2019; Imperatori et al., 2020). Specifically, two studies that have so far investigated the relationship between mentalization and adolescent gambling highlighted that hypomentalizing (i.e., the inability to consider complex models of one's own and others' mind) significantly

contributed to adolescents problematic gambling (Ciccarelli et al., 2021), mediating the relationship between dysfunctional impulsivity and gambling involvement (Cosenza et al., 2019).

Given the association of adolescent gambling behavior with both attachment and mentalization deficits (e.g., Ciccarelli et al., 2021; Terrone et al., 2021), and given that the ability to mentalize develops within attachment relationships (e.g., Fonagy et al., 2007), it appears relevant to jointly investigate, for the first time, the role of specific attachment dimensions and mentalization impairments on adolescents problematic gambling.

1.1 Hypotheses

Based on previous studies, it was hypothesized that: i) both the dimensions underlying the insecure attachment style and mentalizing failures would predict problem gambling (H_1); ii) the effect of attachment dimensions on gambling severity was mediated by mentalization impairments (H_2).

2. Materials and methods

2.1. Participants

Four hundred and eighty-two adolescents (45.9% males) took part in the study. They were recruited in different high schools in the Southern Italy that agreed to participate. Data collection began after the approval of the study protocol of the institutional review boards.

Participants' age ranged from 16 to 20 years ($M_{age} = 17.44$ years; $SD = 1.02$). Prior to data collection, all participants signed informed consent. When participants were minors, informed consent was signed from their parents. The present study was submitted and approved by Ethics Committee of the research team's University Department.

2.2 Procedure

Participants were administered the Italian versions of the South Oaks Gambling Screen - Revised for Adolescents (SOGS-RA; Winters et al., 1993; Colasante et al., 2014), the Attachment Style Questionnaire (ASQ; Feeney et al., 1994; Fossati et al., 2003), and the Reflective Functioning Questionnaire (RFQ-8; Fonagy et al., 2016; Morandotti et al., 2018). The order of presentation of the measures was counterbalanced. The questionnaires were handed out and completed in the classroom. The administration of the instruments took approximately 25 min. After administration, participants were debriefed about the aims of the study and thanked. No remuneration was provided for participating in the study.

2.3. Measures

2.3.1 Gambling severity

The SOGS-RA is a self-report tool used to assess the severity of gambling involvement in adolescence and comprises 12 dichotomous (yes/no) scored items concerning gambling behavior over the last 12 months. The scores range from 0 to 12. The total score is used to categorize participants in three groups: non-problem gambling (score of 0 or 1); at-risk gambling (scores comprised between 2 and 3); and problem gambling (scores of 4 or above). The Cronbach's alpha coefficient of the scale was .80 (Winters et al., 1993).

2.3.2 Attachment dimensions

The ASQ is a self-report questionnaire designed to measure adult attachment. It consists of 40 items rated on a 6-point Likert scale from 1 (totally disagree) to 6 (totally agree) measuring five dimensions of attachment: Confidence, Discomfort with closeness, Need for approval, Preoccupation with relationships, and Relationships as secondary. High scores on each scale are representative of high prevalence of that dimension in participants' attachment style. The Cronbach's alpha coefficients of the ASQ's subscales were: Confidence: .80; Discomfort with closeness: .84; Need for approval: .79; Preoccupation with relationships: .76; Relationships as secondary: .76 (Feeney et al., 1994).

2.3.3 Mentalization abilities

The RFQ-8 is a questionnaire consisting of 8 items self-rated by participants on a 7-point Likert scale, from 1 (strongly disagree) to 7 (strongly agree), designed to measure reflective functioning. It comprises two subscales: Certainty about mental states and Uncertainty about mental states. Low scores on Certainty about mental states is representative of hyper-mentalization, that is an excessive but inaccurate mentalization; high score on Uncertainty about mental states is instead representative of hypomentalization, namely an almost total lack of knowledge about their own and others' mental states. High scores on Certainty about mental states and low scores on Uncertainty about mental states are both indices of a genuine mentalization. The Cronbach's alpha coefficients of RFQ-8 subscales were: Certainty about mental states: $\alpha = .67$; Uncertainty about mental states: $\alpha = .63$ (Fonagy et al., 2016).

2.4. Statistical analyses

Data analyses were carried out using IBM SPSS, version 18. The α level was set at $p < .05$. All variables were initially screened for missing data, distribution abnormalities, and outliers (Tabachnick & Fidell, 2019).

Pearson correlation coefficients were calculated to preliminarily assess relationships between SOGS-RA, ASQ, and RFQ-8. Differences in the distribution of male and female participants among categorical data (SOGS-RA groups) were compared with the Chi-square test.

To identify the potential predictors of gambling behavior, gender, age, and scores on both ASQ and RFQ-8 scales were input to a hierarchical linear regression analysis, with SOGS-RA settled as the dependent measure.

Finally, considering linear regression analysis results, a mediation analysis was carried out to clarify the pattern of relationships among the variables contributing to adolescent gambling severity.

3. Results

Based on the SOGS-RA scores, 51.9% of participants were classified as non-problem gamblers, 26.6% as at-risk gamblers, and 21.6% as problem gamblers. Chi-square analysis showed differences in the distribution of male and female participants among the three SOGS-RA groups ($\chi^2(1) = 147.98; p < .$

001), with the problematic group comprising mainly males.

Correlational analysis showed that SOGS-RA was positively associated with Relationships as secondary (ASQ) and Uncertainty about mental states (RFQ-8), and negatively associated with Certainty about mental states (RFQ-8) (see Table 1). The descriptive statistics of all the variables are summarized in Table 2.

Table 1. Pearson correlation coefficients among variables

	1	2	3	4	5	6	7	8
1. SOGS-RA	-							
ASQ								
2. Confidence	.009	-						
3. Discomfort with closeness	-.062	-.314**	-					
4. Need for approval	.023	-.183**	.159**	-				
5. Preoccupation with relationships	.025	-.063	.153**	.500**	-			
6. Relationships as secondary	.229**	-.072	.279**	.177**	.005	-		
RFQ-8								
7. Certainty about mental states	-.163**	.041	-.128**	-.279**	-.274**	-.020	-	
8. Uncertainty about mental states	.233**	-.094*	.156**	.227**	.328**	-.032	-.588**	-

Note. * $p < .05$; ** $p < .01$

Table 2. Means and standard deviations of measures of interest among gamblers (N=482)

	Mean	SD
SOGS-RA	1.812	2.301
ASQ		
Confidence	31.837	4.198
Discomfort with closeness	38.658	6.490
Need for approval	20.384	6.168
Preoccupation with relationships	29.873	6.334
Relationships as secondary	17.581	5.735
RFQ-8		
Certainty about mental states	.956	.730
Uncertainty about mental states	.723	.529

In relation to H₁, the regression analysis showed that, along with male gender, high scores on Uncertainty about mental states (RFQ-8) and Preoccupation with relationships (ASQ) were significant predictors of gambling severity (see Table 3). The overall model explained about the 33% of the total variance of the SOGS-RA ($R^2_{adj} = 0.33$; $F_{4,477} = 58.92$; $p < .001$). The first hypothesis, which predicted that the dimensions underlying the insecure attachment style and mentalizing failures would predict problem gambling has been thus partially corroborated. Hypomentalization was confirmed as a risk factor for problem gambling, along with Preoccupation with relationships, a dimension representative of insecure attachment.

Table 3. Summary of hierarchical linear regression analysis on adolescent problem gambling (SOGS-RA)

Predictors	B	R^2_{adj}	ΔR^2	β	t	p
<i>Step 1</i>						
Gender	-2.326	.252	.252	-.504	-12.782	.000
Age	-.084			-.037	-.951	.342
<i>Step 2</i>						
Gender	-2.417	.264	.012	-.524	-13.193	.000
Age	-.096			-.043	-1.087	.277
Preoccupation with relationships	.042			.116	2.927	.004
<i>Step 3</i>						
Gender	-2.441	.325	.061	-.529	-13.914	.000
Age	-.111			-.049	-1.314	.190
Preoccupation with relationships	.011			.031	.762	.446
Uncertainty about mental states	1.151			.265	6.672	.000

Note. B = unstandardized coefficient; R^2_{adj} = R^2 adjusted; ΔR^2 = R square change; β = standardized regression coefficient; Preoccupation with relationships (ASQ); Uncertainty about mental states (RFQ-8).

In relation to H₂, and considering the findings in the literature about the role of attachment style and mentalization in gambling and the results of the linear regression analysis, a mediation

analysis was performed with the aim to analyze whether the effect of attachment's dimension Preoccupation with relationships (ASQ) on gambling severity (SOGS-RA) was mediated by Uncertainty about mental states (RFQ-8). The mediation analysis was carried out using the PROCESS 3.1 macro for SPSS (Hayes, 2018). It employs a bootstrapping method for estimating indirect effects, 95% bias-corrected confidence intervals were calculated through 5000 bootstrap samples.

From the variety of the models proposed by the program, the Model 4 was tested (see conceptual model in Figure 1). Specifically, it was tested a model in which Preoccupation with relationships (ASQ) was inserted as independent variable, scores on SOGS-RA as dependent variable and Uncertainty about mental states (RFQ-8) as putative mediator. Gender was putted in the model as covariate. Results confirmed the hypothesis that Preoccupation with relationships (ASQ) indirectly affects gambling involvement through Uncertainty about mental states (RFQ-8). Specifically, Preoccupation with relationships (ASQ) led the Uncertainty about mental states (RFQ-8) to increase, which in turn led gambling severity to increase.

These double positive effects resulted in a positive indirect effect, which led gambling severity to increase via Uncertainty about mental states (RFQ-8) (for results see Table 4 and Figure 2).

Table 4. Results of the mediation analysis testing the effect of Preoccupation with relationships (IV) on SOGS-RA (DV) through Uncertainty about mental states (mediator). Gender was used as covariate

<i>Model summary</i>	<i>R-sq</i>	<i>F</i>	<i>P</i>	
	.328	77.870	<.001	
<i>Model</i>	<i>B</i>	<i>T</i>	<i>P</i>	<i>CI</i>
Constant	4.233	9.285	<.001	[3.337; 5.129]
Preoccupation with relationships	.011	.718	.473	[-.018; .039]
Uncertainty about mental states	1.145	6.634	<.001	[.806; 1.484]
Gender	-2.437	-13.883	<.001	[-2.782; -2.092]
<i>Total effects of IV on DV (R-sq = .266; F = 86.988; p < .001)</i>				
	<i>Effect</i>	<i>T</i>	<i>P</i>	<i>CI</i>
Constant	4.099	8.620	.000	[3.164; 5.033]
Preoccupation with relationships	.042	2.881	.004	[.012; .070]
Gender	-2.414	-13.174	.000	[-2.774; -2.054]
<i>Significant relative indirect effect of IV on DV through mediator</i>				
<i>Mediator</i>	<i>Effect</i>			<i>CI</i>
Uncertainty about mental states	.031			[.020; .045]

Note. IV= Independent Variable; DV= Dependent Variable; R-sq = R square; Preoccupation with relationships (ASQ); Uncertainty about mental states (RFQ-8).

Therefore, the second hypothesis, according to which the effect of attachment dimensions on gambling severity would be mediated by mentalization impairments, was corroborated.

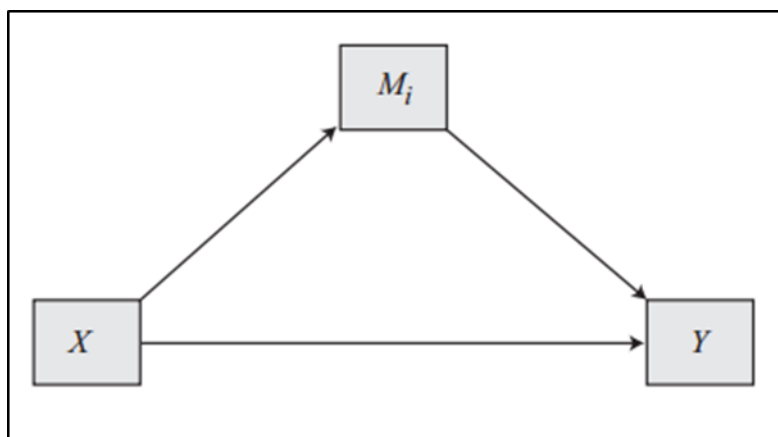


Figure 1. Conceptual model of mediation model tested (Model 4 – PROCESS for SPSS).

X= Independent variable; Y= Dependent variable; M= mediator

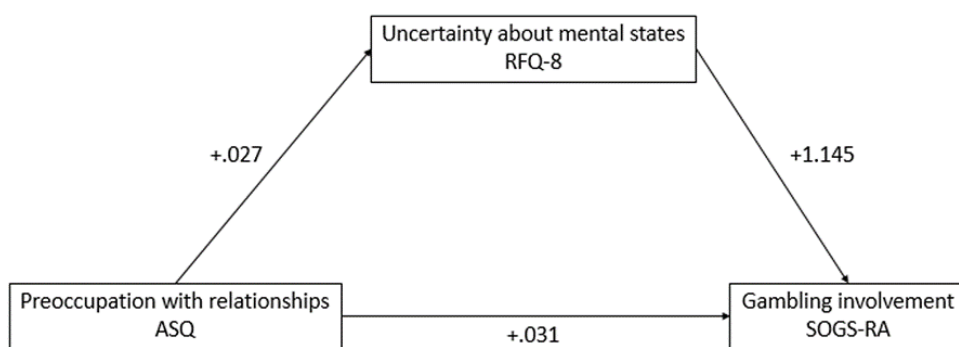


Figure 2. Diagram of the mediation analysis results.

4. Discussion

The present study was the first to jointly investigate the role of specific attachment dimensions and mentalization impairments in adolescent problem gambling. The main aim of the study was to clarify the role of specific dimensions of attachment in adolescent gambling, as well as to explore, for the first time, the causal relationships between attachment, mentalization, and adolescent gambling.

In line with the hypotheses, the results of the regression analysis demonstrated that, alongside male gender, Preoccupation with relationships and Uncertainty about mental states are significant predictors of adolescent gambling severity.

As for attachment, the present results confirm and, at the same time, enrich the extant literature, in as much as clarify, for the first time, using a dimensional approach to the assessment of

attachment, not only which attachment styles, but also which specific dimensions of attachment are involved in adolescent problem gambling. Since Preoccupation with relationships is considered a dimension of the insecure attachment pattern (Fossati et al., 2003), the present results confirmed the role of insecure attachment in adolescent gambling (Calado et al., 2017b; Estevez et al., 2017; Gori et al., 2021; Jauregui & Estevez, 2020; Magoon & Ingersoll, 2006; Pace et al., 2013; Terrone et al., 2021). This resonates with previous studies in which insecure attachment was found to significantly predict gambling severity (Gori et al., 2021), with higher prevalence of fearful attachment observed among problematic gamblers (Di Trani et al., 2017; Keough et al., 2018; Pace et al., 2013).

Specifically, Preoccupation with relationships is an attachment dimension that describes an anxious approach to relationships (Fossati et al., 2003) and that could lead adolescents to seek refuge in risky or problematic behavior (Pace et al., 2013). Based on these observations, it has been proposed to conceptualize addictive behaviors as attachment disorders (Flores, 2004; Schimmenti et al., 2012) and as self-regulation attempts (Khantzian, 1997; Schimmenti & Caretti, 2010): “experiences related to early developmental failures leave certain individuals with vulnerabilities that enhance addictive-type behaviors and these behaviors are misguided attempts at self-repair” (Flores, 2004, p. 7). Ultimately, a lack of closeness and confidence in the early attachment relationships could cause attachment needs to shift into impersonal activities in adolescence (Holer & Kooyman, 1996). According to Pace and colleagues (2013), the insecure attachment style, fostering maladaptive internal working models of themselves, creates an “inclination to evaluate negative experiences as caused by one’s own shamefulness” (p. 257), which leads adolescents to seek a retreat in risky or problem behaviors, such as gambling.

The findings concerning the role of Preoccupation with relationships in adolescent gambling are in line with studies that, from different perspectives, have highlighted the importance of the relational variables in adolescent gambling (Dowling et al., 2017; Frisone et al., 2020; Kalischuk et al., 2006; Sui & Baloglu, 2003; Walters, 1994). These findings also resonate with those obtained by Calado and colleagues (2017b), who found “anger towards attachment figures when attachment needs are frustrated” predict adolescent gambling. At the same time, the present results differ from those obtained by Chimienti and De Luca (2012) who found higher levels of Relationships as secondary – a dimension of dismissing attachment – in adult pathological gamblers as compared to controls. To shed light on these contrasting results, it is helpful to consider that the samples differed in both age and gambling severity. So, it is reasonable to assume that these findings are only apparently in conflict: the tendency to worry about interpersonal relationships seems to be more relevant in adolescent problem gambling, whilst a rejecting approach towards relationships seems to be important in adult gambling addiction. A

deeper investigation that clarifies the trajectories, from adolescence to adulthood, of attachment dimensions in influencing gambling behavior is needed.

About the role of mentalization, the present results corroborate the findings in the literature (Ciccarelli et al., 2021, 2022; Cosenza et al., 2019), suggesting that lower abilities to perceive and interpret behaviors in terms of intentional mental states is a concrete risk factor for adolescents gambling involvement. Higher levels of uncertainty about mental states, i.e. hypomentalization, reflecting a “concrete” thinking characterized by an absence or unwillingness to develop more complex models of self and others' mind (Badoud et al., 2015), could facilitate gambling involvement undermining the insight into their own behaviors (Ciccarelli et al., 2021). In this regard, two studies that have examined differences between problem and non-problem gamblers' performance (Brevers et al., 2013, 2014) observed that, although they performed worse than controls in both gambling and non-gambling tasks, problem gamblers were overconfident in their performance. The authors explained this impaired insight hypothesizing an underlying impairment of the metacognitive abilities. This hypothesis has also been confirmed by Nigro and colleagues who found that an impaired mentalizing predicted chasing behavior, namely the propensity to continue gambling despite previous losses (Nigro et al. 2019; Nigro, Matarazzo et al., 2019).

As the mediation analysis indicated, mentalizing deficits mediate the effect of preoccupation with relationships on adolescent gambling severity. As the extant literature suggests, secure attachment represents a necessary condition for the development of mentalization abilities that will provide the individual with self-awareness and the ability to reflect on thoughts and feelings, as well as to use adaptive emotion regulation strategies. In fact, the ability to flexibly adapt emotion regulation strategies to different situations is strictly correlated with the ability to reflect on one's own and others' mental states (Allen et al., 2008; Fonagy et al., 2002; Fonagy & Target, 1997; Marszał & Jańczak, 2018; Sharp et al., 2011).

In light of these premises, these novel and interesting findings seem to suggest that early dysfunctional attachment experiences could hinder the development of mentalizing abilities, impairing self-consciousness and determining a concrete style of thinking (Fonagy et al., 2002, 2012). In turn, mentalizing deficits negatively influence the development of adaptive emotional regulation strategies and promote risky behaviors, such as gambling, probably to manage unpleasant emotions and to cope with anxiety about relationships (Gambin et al., 2021; Keough et al., 2018; Pace et al., 2013).

Although these results are preliminary, they suggest that the preoccupation with relationships may be an important precursor to gambling and support the hypothesis that adolescents

preoccupied with relationships (a dimension of insecure attachment) have more severe gambling involvement due to poor mentalization abilities.

5. Limitations and strengths

Several limitations should be taken into account when interpreting the present results, including: i) the correlational nature of the study that does not allow to draw firm conclusions about causal relationships between the examined variables; ii) the exclusive use of self-report measures that could be affected by recall bias and social desirability; iii) the use of the SOGS-RA that could inflate the problem gambling rates; iv) the use of a convenient sampling method. Future investigations are needed to understand whether the present findings are applicable to other populations with different levels of gambling severity.

Despite the limitations, the present study presents some relevant strengths. It provided, for the first time, insight into the interrelationships between mentalization failures, attachment dimensions and adolescent gambling severity. Moreover, the use of a large adolescent sample and the use of sophisticated statistical techniques enhance the results obtained in the present study.

6. Conclusions

Taken together, these preliminary novel findings have important clinical implications because they shed light on the interrelationships between attachment dimensions and mentalization in adolescent gambling and suggest that poor mentalization, resulting from bad attachment experiences, could create a fertile ground for the development of gambling problems in adolescence. Considering mentalizing deficits as an important target for therapeutic and prevention interventions would be helpful in both reducing and preventing the severity of problem gambling involvement among adolescents. Given the growing percentages of adolescents involving in gambling behaviors, the early identification of the risk-factors of adolescent problem gambling could limit the long-term adverse consequences of such problematic behavior (George & Murali 2005), for both treatment and prevention purposes (e.g., Floros, 2008; Frisone, 2021; Gupta & Derevensky, 2000, 2005). The complexity of adolescent gambling phenomenon enforces the development of a common-shared, validated, and successful treatment paradigm, which takes into account the role played by both attachment dimensions and mentalization abilities.

Ethical approval *: The present study was submitted and approved by Ethics Committee of the Università degli Studi della Campania – Luigi Vanvitelli (Protocol number: 27/22.07.2021).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. When participants were minors, informed consent was signed from their parents.

Data Availability Statement *: The data that support the findings of this study are openly available from the corresponding author upon reasonable request. The data are not publicly available due to the privacy or ethical restrictions.

Conflict of interest statement *: The authors declare that no constraints on publishing nor conflicts of interest exist that readers should know about in relation to this manuscript.

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