

**Gambling Disorders Among Young Women Regular Gamblers: The Unique and Common
Contribution of Executive Thinking Style and Mindfulness**

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Abstract

The aim of this study is to investigate the role played by mindfulness in the relationship between cognitive styles and gambling disorders in a sample of female young adults. Participants in this study (125 women; $M_{age} = 18.64$ years; $SD = 1.7$) were recruited in betting or bingo halls. They completed the South Oaks Gambling Screen, the Child and Adolescent Mindfulness Measure, and Sternberg's questionnaire on thinking styles. The results from the mediation analyses revealed that the executive thinking style increases gambling and that the deficit in mindfulness ability mediates this relationship. Theoretical and clinical implications are discussed.

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Introduction

The global gambling market has massively expanded over the past few years. Worldwide, the gross gambling yield (GGY) reached 495 billion USD in 2019, with a contribution of around 137.5 billion USD to the U.S. economy and over 120 billion USD to the European economy (Statista 2019). To date, the gambling market size has the potential to grow by 231.63 billion USD during 2020-2024, and the market's growth momentum will accelerate at an exponential rate during the forecast period (Technavio 2020). The growth of these markets has caused the increase of the so-called gambling disorder in all countries. Gambling disorder (GD) is categorized as a non-substance-related addictive behavior. To be diagnosed with GD (previously named pathological gambling), people must meet four out of nine criteria delineated in the fifth edition of the Diagnostic and Statistical Manual for Mental Disorders (DSM-5; American Psychiatric Association 2013). A large number of studies highlighted the role of negative affective states (Griffiths 1995; Nigro et al. 2017) and the presence of cognitive biases or distortions (Mathieu et al. 2018) on the basis of disordered gambling. As stated by some authors, gamblers exhibit a lack of emotional awareness (Cosenza et al. 2014; Pace and Passanisi, 2018) which they develop to balance negative mood and reduce stress (Nower and Blaszczynski 2010).

Recent literature has identified some factors that seem to play a role in the prevention and control of gambling disorder. In line with the Risk and Protective Factors Model (Rutter and Garmezy 1983) and the Integrated Risk and Protective Factors Model of Gambling Types (Hearn et al. 2020), social, cognitive, affective and personality factors play a key role as protective elements of gambling behavior. The ability of mindfulness seems to be an important variable in this context (Maynard et al. 2018; Pace et al. 2020). Beginning with the considerations listed above, the main aims of the present study are to analyze the mediation role of mindfulness in the relationship

between cognitive styles and problem gambling in a sample of female young adults.

Female gambling patterns

Epidemiological data and empirical studies highlight how gambling is a more common phenomenon among men than women. Men have higher participation rates and more harm from gambling (Ellenbogen et al. 2007; Pace and Passanisi, 2017). Nevertheless, a recent study suggests that women's participation rates in gambling are constantly growing, which indicates that involvement in gambling is similar for men and women (Pace et al. 2020). It is possible that this evolution is connected to more socially acceptable conditions allowing women to attend gambling environments (Nuske et al. 2016). Another possibility is that the increased participation of women in gambling is associated with the increased number of women attending community clubs (safe environments in which they can meet friends) that offer gambling products (McCarthy 2018).

Overall, research has shown some differences in gambling patterns related to gender (Merkouris et al. 2016). For example, men play to assert themselves in the social context, showing themselves to be more competitive than women (Martin and Kirkcaldy 1998), preferring strategic gambling activities (Phillips and Wilson 2009), and choosing game footholds in a gaming industry where conflict with others is expected. Women, instead, generally choose games of chance where confrontation is not expected, using bingo, slot machines and scratch cards (Potenza et al. 2001). Social perceptions of the latter as an innocuous activity lead to a more accepting attitude, hence increasing this behavior (Weidberg et al. 2018). Male testosterone levels, which increase risk-taking decisions, may play a role, explaining the gender differences in gambling activities (Stanton et al. 2011). Thus, men and women would use this maladaptive behavior to satisfy a frustrated need: men, in fact, seek domination, affirmation over others, while women try to satisfy the need to preserve intimacy and avoid social isolation (Sapienza et al. 2009).

Related to these different motivations to gamble, recent research has shown how women use gambling as a coping strategy to reduce the feelings of dysphoria or depression and loneliness and

as a way to decrease anxiety and tension from social, household and workplace demands (McCarty et al. 2018). As for impulsivity, some studies have found a stronger association with gambling in males (González-Ortega et al. 2013), while other research in females (Nigro et al. 2017). It was also observed that women experience gambling problems differently than men (Brown and Coventry, 1997); women who gamble have a faster progression from initiation of gambling to gambling related issues than men do (Svensson and Romild 2014). Accordingly, this is an issue that needs rapid and incisive intervention in order to protect women from gambling disorders.

Gambling, cognitive styles and mindfulness

A gambling disorder is a behavioral addiction unrelated to substances. It can be defined as a persistent and recurring pattern of gambling behavior that leads to significant impairments in occupational and social life (American Psychiatric Association 2013). It is characterized by enduring the loss of money even with tragic consequences, such as exaggerated debt and collapse of romantic relationships. People who suffer from gambling disorders show symptoms such as the need to play with increasing amounts of money, feelings of anxiety or irritability when it is not possible to play, and the endangerment of relationships and careers due to gambling. One of the most interesting theorizations in gambling studies is the Pathways Model of Problem and Pathological Gambling (Blaszczynski and Nower 2002). This model highlights the role of cognitive processes connected to gambling. It particularly analyzes the complex set of cognitive mechanisms that encourage persistent gambling despite repeated losses (Fortune and Goodie 2012; Goodie and Fortune 2013). When the frequency of gambling increases, incorrect and faulty cognitive schemas appear. These schemas shape beliefs on attribution, personal abilities and control over outcome, distorted perceptions or superstitious thinking. Therefore, the model suggests the main role of poor critical thinking in the development and maintenance of problem or pathological gambling behaviors.

Following the importance of cognitive processes in this research topic, we recently suggested that styles of mental self-government may play a key role in understanding gambling behavior (Pace

and Passanisi 2018). Moreover, mental self-government styles may help the individual to understand better the various ways of thinking, guide the learning of certain situations and discover individual preferences (Zhang and Fan 2012). Sternberg's theory of mental self-government states that thinking styles can be considered in terms of constructs from the notions of government. Accordingly, Sternberg (1999) holds that as there are many ways of governing a society, there are also many ways of managing activities. He called such ways "thinking styles," suggesting the existence of three functions of government: legislative, executive and judiciary. The legislative thinking style connotes a person capable of initiative with tendencies to do things in his/her own way, able to perform unstructured tasks, and characterized by creative impulses. The executive thinking style characterizes a person who is capable of executing directives, doing what is assigned to him or her, and preferring problems that are pre-structured. The judiciary thinking style defines a person who tends to make judgments about things or people, critically evaluating things that are happening.

These styles are capable of "guiding" a person's action, influencing cognitive processes, beliefs and the organization of resources to prioritize what they must or should not deal with. Following the social cognitive theory (Bandura 1996; Bandura and Walters 1977), each of these styles governs the actions generating behaviors that, in turn, produce responses elaborated by the individual to regulate their cognitive resources.

A relevant aspect that can affect the metacognitive self-regulation capacity is mindfulness (Felver et al. 2016). Mindfulness is the propensity to be alert and aware of what is happening in one's inner world in the present and the ability to keep one's consciousness focused on current reality. Bishop et al. (2004) considered mindfulness to be a self-regulation of attention on the direct experience of the present moment along with an open curiosity about one's own experience. The practice of mindfulness has usually been associated with a decrease in distress and a fostering of well-being (Felver et al. 2016). Moreover, mindfulness-based interventions led to the development of the Mindfulness Based Stress Reduction program (MBSR). For example, an important meta-analysis

(Li et al. 2017) found an important role for mindfulness-based intervention in reducing the frequency and amount of substance use disorders, alcohol abuse, eating disorders, and gambling (Shead et al. 2019; Maynard et al. 2018). Following these interventions, significant reductions were observed in mood disturbance, negative body image, pain, anxiety, and depression (Li et al. 2017). Mindfulness deficits are attributable to a lack of awareness of one's self-related mental states as well as the difficulty of intentionally regulating attention and managing negative emotions. A deficit in this ability may induce the adolescent, for example, not to understand the experience and links between actions and consequences, also without an appropriate assessment of the stimuli on a cognitive and social level (e.g., Chiesa et al. 2011). The literature highlights how the deficits in this self-regulatory capacity are risk factors for gambling concerns, problem gambling severity, as well as gambling expenditure and frequency (de Lisle et al. 2014; Passanisi et al. 2019).

The Current Study

The Pathways Model of Problem and Pathological Gambling (Blaszczynski and Nower 2002) and its subsequent theorizations (Emond and Marmurek 2010) mainly focused on risk factors but did not capture the protective factors that prevent a problematic gambling pathway (Dickson et al. 2002, 2008; Lussier et al. 2007).

With the Risk and Protective Factors Model (Rutter and Garmezy 1983) and the Integrated Risk and Protective Factors Model of Gambling Types (IRPF-MGT) (Hearn et al. 2020), researchers tried to solve this problem by promoting the integration of non-problem and problem gambling pathways into a single applied framework. Social, cognitive, affective and personality factors play a leading role as protecting elements in gambling behavior.

Following published research, it is anticipated that the ability of mindfulness should be an important protective variable in the setting of gambling behavior (Shead et al. 2019; Maynard et al. 2018). Moreover, recent studies observed the association between the use of executive thinking (Pace and Passanisi 2018; Lessing et al. 2019) and gambling. According to this perspective, individuals with an executive thinking style may engage in the most available and attractive gambling behavior

without properly assessing the costs and benefits of such a choice.

In line with the IRPF-MGT, the paradigm of risk and protective factors related to psychopathological outcome (Rutter and Garmezy 1983) and with social cognitive theory (Bandura 1996), it is possible to hypothesize that executive thinking may lead to disordered gambling (H1). Executive thinking is connected with deficits in metacognitive processes (mindfulness) (H2) and finally with deficits in mindfulness, as the latter may play a role as a protective factor and can mediate the relationship between executive thinking and gambling (H3). These interrelations may allow researchers to implement the models to understand the profile of disordered gamblers by highlighting which deficits are implicated in the psychological vulnerability of gamblers, in order to design therapeutic interventions involving and investigating the gamblers' functions of mental self-government and the ability to reflect on their own actions.

Finally, the literature on gamblers has primarily focused on the functioning of male gamblers. Only a few empirical studies have analyzed the psychological processes of women gamblers in relation to how cognitive variables and thinking styles may promote erroneous cognition (MacLaren et al. 2012; Stange et al. 2018). Thus, another goal of this study is to explore further the variables involved in female gambling.

Method

Participants and Procedure

One hundred and twenty-five young-adult women took part in the study ($M_{age} = 18.64$ years; $SD = 1.7$) between 18 and 21 years old. They were recruited in betting or bingo halls in three large cities of Sicily (Italy): Palermo, Catania and Enna, and were asked to complete three self-report questionnaires. At first, 130 women were asked to join in the research. Three of the contacted women objected to involvement in the study. Two were excluded because they declared that they gambled less than once a week and could not be considered regular gamblers (Graham 1994).

Participants were informed about the aim of the research, and they answered general questions during the procedure and specific questions during the debriefing. The data collected were

anonymous, and all participants provided written informed consent. Participants did not receive any compensation for their participation. All procedures performed in this study were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Measures

South Oaks Gambling Screen. Gambling was measured with the South Oaks Gambling Screen (SOGS; Lesieur and Blume 1987). This 18-item questionnaire is organized in two parts: the first part (5-item) gives information on type of gambling (played cards, bet on horses, etc.) and on related issues (e.g., “Have you ever quit gambling for a period of time?”, “What is the largest amount of money you have ever gambled on any one day?”); the second part consisted of 13-items addressing information on the frequency of some behaviors related to gambling (e.g., “When playing the game of chance and lose, how often do you return the next day to try to win back the lost amount?”, “Have you ever gambled more than you wanted?”). Scores on SOGS are calculated by adding up the number of questions which show an “at risk” response. The scale showed a good reliability ($\alpha = .78$).

The *Child and Adolescent Mindfulness Measure*. Mindfulness was tested with the Child and Adolescent Mindfulness Measure (CAMM; Greco et al. 2011; Italian adaptation by Chiesi et al. 2017). The participants were assessed by asking them to evaluate present-moment awareness and non-judgmental, non-avoidant responses to thoughts and feelings in children and adolescents on a 5-point scale (0 = never true, to 4 = always true). The measure yields to a single overall score that was reversed so that the higher scores indicate less self-reported mindfulness. In the present study Cronbach’s Alpha was .81.

The *Thinking styles Inventory*. Thinking styles were measured with the Thinking Style Inventory (TSI; Sternberg and Wagner 1992). This instrument is made up of 104 statements on a 7-point Likert scale (1= never, to 7= always). The questionnaire identifies 13 cognitive style (functions: legislative, executive, judicial; forms: monarchic, hierarchic, oligarchic, anarchic; levels: local,

global; scope: internal, external; leanings: liberal, conservative). In the present study only the three functions of self-government were considered: executive ($\alpha = .78$), judicial ($\alpha = .75$), legislative ($\alpha = .79$).

Results

Descriptive statistics and intercorrelational analyses are displayed in Table 1.

The correlation analyses among variables showed how gambling was significantly and positively connected with low levels of mindfulness ($r = .60$, $p < .01$) and with executive thinking style ($r = .41$, $p < .01$). Moreover, low levels of mindfulness positively correlated with executive thinking style ($r = .31$, $p < .01$). Judicial thinking style was positively related to legislative thinking style ($r = .44$; $p < .01$) and executive thinking style ($r = .32$, $p < .01$). No other significant intercorrelations were found.

- Insert Table 1 about here -

A regression analysis was performed to examine whether low levels of mindfulness mediated the relationship between executive thinking and gambling. Results showed that: (a) executive thinking (independent variable) was a significant predictor of gambling (dependent variable) ($\beta = .41$, $t = 4.98$; $p < .001$; $R^2 = .17$); (b) executive thinking was a significant predictor of low levels of mindfulness (the mediator) ($\beta = .31$, $t = 3.61$; $p < .01$; $R^2 = .10$); (c) when gambling was regressed on executive thinking and low levels of mindfulness, the significance of the executive thinking coefficient decreased ($\beta = .09$; $t = 3.35$; $p < .01$) and the low mindfulness coefficient remained significant ($\beta = .27$, $t = 7.33$; $p < .001$), suggesting a partial mediation. The model is shown in Figure 1.

- Insert Figure 1 about here -

The bootstrap analysis using the INDIRECT SPSS macro (Preacher & Hayes, 2008) has exerted an indirect effect (.07) and confirmed a significant partial mediating pathway from executive thinking to gambling through low mindfulness (95% confidence interval [CI] = .02 to .10).

Discussion and conclusions

In this study with female gamblers, we aimed to explore the mediating role of mindfulness in the relationship between thinking styles and gambling. The preliminary results highlighted how only the executive style is connected to gambling. In line with the social-cognitive theory (Bandura 1996), this link may suggest how certain thinking styles and cause-and-effect understanding can increase gambling activities because the risks and consequences that gambling can have on the life of the individual are not adequately estimated. It is plausible that preference for simple execution of tasks, without delving into the possible consequences of one's actions and behaviors, might predict impulsive behaviors (based on automatic thoughts taking place outside of awareness), such as problem gambling (Chen and Zhang 2010). Furthermore, and strictly related to that, the executive style is connected to a deficit of mindfulness skills in female gamblers. In line with the literature (e.g., Chiesa et al. 2011), the cognitive sphere of thinking and reasoning may influence more complex skills and metacognitive factors, such as that of understanding one's own and others' emotional lives as well as what happens around oneself in the world.

Moreover, the model suggests how poor mindfulness skills mediate the relationship between executive style and gambling. Hence, in line with the model of risk factors (Rutter and Garmezy 1983) and the IRPF-MGT (Hearn et al. 2020), a deficit in the skills that enable the understanding and awareness of the link between actions and consequences and the mere execution without a critical perspective, may increase gambling behavior. Moreover, the lack of awareness of one's self-related mental states, as a mediator of the relationship between an executive thinking style and problem gambling, seems to represent a risk factor for young women who regularly gamble. It is plausible that the contemporary propensity for a purely executive cognitive style and the lack of familiarity with understanding one's mental states may represent fertile ground for gambling.

Accordingly, this represents a wrong adaptation strategy that acts as an emotional regulator for young women who gamble regularly. The emerged model suggests a framework for psychological vulnerability in which executive thinking would lead the individual to a poor understanding of reality on a cognitive level. Consequently, this deficit may restrict individuals' freewill and awareness, as they would not be able to fully understand what is happening in the emotional and social world.

This study may help to extend the literature by suggesting valuable clinical insights to prevent gambling disorders among young woman. However, it does present some limitations and may suggest other research perspectives. First, other variables can play a key role (e.g., internalizing discomforts, the role of the social support of parents or children) in this functioning model (e.g., Pace et al. 2019). In this way, it would not only have a clinical perspective, but may provide a psychosocial functioning model for planning interventions and targeted social policies. Therefore, future research could benefit from the use of other types of measures, perhaps involving different informants as well as observing implicit interviews and tools, a longitudinal study could provide causal links with greater accuracy throughout the life cycle. Moreover, the participants that took part in the present study were all Caucasian. It is well known that factors such as ethnicity and socio-economic status can affect mindfulness (e.g., Spears et al. 2017). Future research could explore how such variables may affect the present model in which the predictive function of cognitive styles can be mediated by low mindfulness on problem gambling.

Despite these highlighted limitations, in this article we suggest and explore treatment hypotheses that involve cognitive and emotional variables in the development of problem gambling among young women. Specifically, this study suggests how mindfulness may also help people react differently to the emotional and cognitive discomfort they experience—for example, when the individual faces scarce cognitive resources to understand events, perception leads patients to recognize discomforts and to observe critically without judging instead of engaging in the application of addiction.

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Table 1. Descriptive statistics and intercorrelations among the studied variables

	M	SD	1	2	3	4	5
1. Gambling	1.77	(1.08)	-				
2. Low Mindfulness	14.22	(5.22)	.60**	-			
3. Legislative thinking	37.11	(7.99)	.15	.16	-		
4. Executive thinking	36.89	(9.01)	.41**	.31**	.14	-	
5. Judicial thinking	32.43	(6.98)	.05	.10	.44**	.32**	-

** $p < .01$

Figure 1. Summary Model

$F(1,124) = 13,0572$; $p < .001$; $R^2 = .40$

