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Problematic gambling behaviour in adolescents: prevalence and its relation to social, self-regulatory, and academic self-efficacy

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ABSTRACT

A non-random sample of 560 Italian high school students completed a questionnaire consisting of demographic items and questions about gambling behaviour, motivations, and perceived social, self-regulatory, and academic self-efficacy. Among these participants, 49 of them were classified as at-risk gamblers, 21 as problem gamblers, and the rest as non-at-risk/problem gamblers or non-players. Chi-square tests showed that gambling, several game types, some motivations to gamble, and at-risk/problem gambling were more common among males than females. Logistic regression was employed to predict the risk of being an at-risk/problem gambler and results showed that medium and high levels of self-efficacy halves this risk; however, the halving of the risk was not statistically significant with respect to perceived academic self-efficacy. It was concluded that the three forms of self-efficacy taken into consideration can be protective factors for at-risk/problem gambling.

Adolescent gambling

Gambling has traditionally been considered a typically adult activity. In fact, early research on the relationship between teenagers and gambling (Griffiths, 1995) showed that in the 1980s and 1990s only a small number of young people had money to spend on such games, which meant that the attraction was more for fun than for the chance to make money. Over the past twenty years, the landscape has completely changed, and gambling has reached remarkable proportions, even in adolescents, so much so that it has become a serious concern in several countries of the world and not only in Western ones (Blinn-Pike, 2017). Even in Italy, compared to the past, the forms of legalized gambling for adults have multiplied, from video lotteries to slot machines present in numerous public places (bars, tobacco shops, shopping malls, etc.), and not only in casinos. New internet-related modes of play have also been established, such as online betting and virtual casinos. The role of video games that simulate gambling (which use a virtual currency instead of real money) should not be overlooked, as by requiring small sums of money to win more easily (getting more games, lives, points, game levels, etc.), they reinforce gambling habits through encouraging children and teens to spend money to play (Armstrong et al., 2018).

It is estimated that between 1.9% and 15% of adolescents report gambling activities, and, of these, about 28% could be at risk of developing problematic gambling behaviour (Andrie et al., 2019; Calado et al., 2017). Adolescence is recognized as a period of critical development for forms of addiction, including behavioural ones, such as problem gambling. International literature has revealed that adolescents are attracted to risk and transgression and are led to underestimate the

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consequences of their actions (Andrie et al., 2019). In addition, they are particularly vulnerable to addictions, such as problem gambling, because of the characteristics of their neurobiological development (Chambers et al., 2003). Although forms of pathological gambling may start in pre-adolescents, adolescents tend to have a higher prevalence of gambling behaviours than the general population (Molinaro et al., 2014).

In Italy, despite the law banning gambling for minors, according to the results of the European School Survey Project on Alcohol and Other Drugs – Italy, conducted in 2017, 40.2% of respondents under 18 years old say they have played at least once in their lives, and 33.6% of underage students gambled in the last year of the survey, whereas the percentage of players aged 15 to 19 with a 'problematic' gambling profile was found to be 7.1%, and 13.5% were peers with a 'problematic' and 'at-risk' gaming profile (Cerrai et al., 2018). There are several risk factors involved (Donati et al., 2013; Merkouris et al., 2016), including age and gender. Younger people seem to be at greater risk of developing problematic gambling behaviours, and it seems that the early appearance of such behaviours preaches the severity of the disorder in adolescence (Rahman et al., 2012). Males seem to be more involved in gaming activities (Weidberg et al., 2018; Winters et al., 1993) and tend to present a higher risk of developing problem gambling behaviours (Donati et al., 2013; Merkouris et al., 2016). However, some authors believe that gender differences in problem gambling behaviours are probably due to differences in the choice of games, with females preferring non-strategic gambling activities, such as electronic gaming machines (EGMs), while males prefer more strategic activities (Merkouris et al., 2016). In addition, different risk factors can intervene by gender; for example, in a sample of Italian adolescents, it has been found that probable reasoning ability, the perception of the economic profitability of gambling, and gambling peer behaviour were found to be predictors only among male adolescents, whereas parental gambling behaviour had predictive power in female adolescents (Donati et al., 2013).

Being involved in online games could be an additional risk factor. Problematic behaviours related to internet use, online gaming, and gambling have been found to be associated with each other. It is possible that those who exhibit problematic gambling behaviours can more easily engage in online games, which also demonstrates a higher level of psychological distress than land-based forms of gambling (Karlsson et al., 2019).

Motivations for gaming can also be considered as particular risk factors for problem gambling in adolescence. Females typically report gambling to manage dysphoria/depression, while males engage in gambling as a way of attaining self-enhancement (Weidberg et al., 2018). Some authors have noted that for adolescents, compared to adults, problem gaming is socially oriented, and adolescents gamble less frequently for personal service or to win money (Lynch et al., 2004). However, different reasons for gaming were found for teenagers, such as excitement, enjoyment, winning money, relaxation, escaping from problems, and alleviating depression. Yip et al. (2011) found that, in comparison to low-risk gamblers, adolescent problematic gamblers were more likely to report excitement, financial, escape, and social motivations for gambling. Winning money, excitement, and not being able to resist the temptation are the reasons found to be associated with problematic gambling in adolescents (Dowling et al., 2017; Hardoon & Derevensky, 2002).

Research focused on adolescents has also investigated the harmful effects of excessive gambling, which affects physical and mental health, social relationships, school achievement, and finances (Raisamo et al., 2013; Salonen et al., 2018). These harmful consequences of excessive gambling support the necessity of new research, such as the current study.

Alongside risk factors, some important facets were identified in prior research that protect against problematic gambling in adolescents and young adults (Dowling et al., 2017), such as female gender, parental control, perception of support from relatives and friends, resilience, emotional intelligence, social competence, adaptive coping strategies, well-being, and understanding of arbitrariness. However, research into at-risk and problem gambling protective factors is still at its early stages and not yet sufficient to adequately guide prevention initiatives. Thus, this is another important reason for this study.

Self-efficacy

In the context of socio-cognitive theory, Bandura (1989) proposed the concept of human agency; that is, the ability to make things happen and to intervene on reality, exercising causal power. A. Bandura (1997) considers that self-efficacy is the most important and incisive mechanism of human agentivity. It refers to the individual's beliefs with respect to his/her own ability to achieve a certain desired result (Bandura, 1977a). From a socio-cognitive point of view, the choice of behaviour, the commitment, and the perseverance in implementing it depend to a large extent on beliefs of self-efficacy. However, the sense of self-efficacy does not act as a personal disposition regardless of environmental data. It has a direct influence on behaviour, but also an indirect influence by defining the objectives to be pursued, the degree of motivation, the level of aspiration, the assessment of success expectations on the basis of the perception of environmental data, and the opportunities and risks associated with it. In addition, beliefs of self-efficacy influence the way environmental data are perceived. People with a strong sense of self-efficacy are more inclined to face difficult tasks, to commit to achieving their (even ambitious) goals, and to attribute any failures to low commitment or resources (Bandura, 1997). Some research has shown that self-efficacy is a fundamental predictor of positive adaptation in adolescence and the achievement of results in different life domains, even in the face of negative events (Pajeres & Urdan, 2006). Some dimensions of self-efficacy may play a significant role in adolescence as factors related to the avoidance of risky behaviours and, more generally, for personal well-being and social adaptation at this stage of life (Bandura, 2006). One of these is undoubtedly the ability to undertake and maintain social relations and to affirm one's own opinions and rights (social self-efficacy). Also fundamental are the beliefs that adolescents have about their ability to resist peer pressure to engage in risky activities (self-regulatory efficacy). Finally, an important role for social adaptation and academic success is played by the student's beliefs about his/her own ability to plan and organize school activities (academic self-efficacy). In this regard, pathological gamblers are more likely to have poor school performance, as demonstrated in both cross-cutting studies (Latvala et al., 2019) and longitudinal studies (Winters et al., 2002). In gambling studies, self-efficacy has been defined primarily as the individual ability to avoid involvement in problem gambling (Barbaranelli et al., 2017).

Interest in this construct has mainly developed in clinical trials aimed at assessing the ability of individuals in treatment to abstain from gambling (May et al., 2003). Very little, however, is known about self-efficacy as a protective factor for problem gambling (Barbaranelli et al., 2017; Yip et al., 2011). Although the ability to resist the desire to play is fundamental, other facets of self-efficacy can be important in adolescence, such as social, self-regulatory, and academic self-efficacy.

Aim of the study

Although research on gambling in adolescents has developed significantly in recent years (Calado et al., 2017), the role of self-efficacy in predicting problem-gambling risk merits additional study. In addition, most empirical findings on teenage gambling come from non-European countries (mainly from North America and Australia).

This study was conducted in Italy, with a sample of Italian teenagers, and had two distinct purposes.

The first purpose of the study was to investigate the prevalence and certain characteristics of gambling behaviour (including the psychological needs or motivations underlying gaming), checking for the presence of any gender differences. The assumptions were that the prevalence of at-risk /problematic gambling was greater in males than in females and that there were no differences between underage and adult students. In addition, it was hypothesized that males and females and the two groups of players ('at-risk/problematic' and 'no problem with gambling') differed, at least in part, in terms of their motivations for gaming and the levels of social, self-regulatory, and academic self-efficacy perceived.

The second purpose of the research was to test the hypothesis that perceived low social self-efficacy, low self-regulatory efficacy, and low academic self-efficacy, along with other important variables already investigated in the literature (male gender and online gambling), predict in a positive way the risk of excessive gambling (i.e. at-risk/problematic).

Method

Participants

The research sample consisted of 560 adolescents, males and females, between the ages of 14 and 20 (M = 16.23; SD = 1.23). Of those, 73.9% (N = 414) were underage, while the remaining 26.1% (N = 146) were adults. The participants attended one of two vocational secondary schools. The two schools were located in a medium-sized city (with about 80,000 inhabitants) in northern Italy.

Instruments

Socio-demographic characteristics
Age, gender, nationality (Italian or foreign), the family's socio-economic status, allocated on the basis of the value of parental possessions and the income from parents' professions (very high, high, medium, low, and very low); the money available on average every week; and the ability to use a credit card were recorded.

Questions about gambling behaviour
These were formulated from research already published in the literature (e.g. Floros et al., 2015; Låftman et al., 2019): having or not having gambled at least once in the last year, having or not having gambled online (with computers, tablets, or smartphones) at least once in the last year, and, for those who have played, the type of gambling carried out at least once in the last year.

Question about the psychological needs and motivations behind gambling
The questionnaire contained a multiple-choice question consisting of a list of psychological needs met by gambling, grouped into 7 categories according to the existing literature (e.g. Lynch et al., 2004; Yip et al., 2011): (1) pure fun, (2) the taste of the challenge, (3) the possibility of distracting oneself from everyday problems, (4) the ability to earn money, (5) boredom, (6) the influence of friends, and (7) the influence of family members. It was left to respondents to indicate other free responses that were categorized as 'other responses'.

South Oaks Gambling screen-revised adolescent (SOGS-RA)
It is one of the most widely used questionnaire for diagnosing gambling problems among adolescents (in line with DSM criteria). The Italian version of the questionnaire was validated by Colasante et al. (2013). This instrument has good psychometric properties, according to several studies. Although there are some variations among the studies with respect to the interpretation of the data, generally, a person who obtains a score of 4 or higher is coded as a 'problem player,' one who achieves a score of between 2 and 3 is a 'player at risk,' and one who has a score of between 0 and 1 is an 'individual with no problem in gambling' (Colasante et al., 2013; Winters et al., 1993).

Perceived social self-efficacy scale
This scale was devised by Bandura (1993) for children and later adapted for high school adolescents. The Italian version of the teen scale has satisfactory reliability, with a Cronbach's alpha of.86 and a corrected item-total-scale average correlation coefficient of .53 (Pastorelli & Picconi, 2001). The scale consists of 13 items, each of which is evaluated on a five-position continuum: 1 is not capable at all, 2 is not capable, 3 is with average capability, 4 is very capable, and 5 is fully capable. Depending

on the total raw score obtained, each participant's level of self-efficacy was classified in one of the following categories: 13–48 is very low, 49–53 is low, 54–56 is average, 57–59 is high, and 60–65 is very high.

Perceived regulatory self-efficacy scale

Also mutated from Bandura (1993), it has been adapted and validated in Italy by means of a sample of high school adolescents and has adequate reliability, with a Cronbach's alpha of .86 and an item-total-scale average correlation coefficient of .53 (Pastorelli & Picconi, 2001). The scale consists of 12 items, each of which is evaluated on a five-position continuum: 1 is not capable at all, 2 is not capable, 3 is with average capability, 4 is very capable, and 5 is fully capable. Depending on the total raw score obtained, each participant's level of self-efficacy was classified in one of the following categories: 12–45 is very low, 46–50 is low, 51–54 is average, 55–56 is high, and 57–60 is very high.

Perceived academic self-efficacy scale

The participants' perceived level of academic self-efficacy was measured through a scale originally developed by Bandura (1993) for children and later adapted to high school students. The Italian version of the teen scale has a level of trustworthiness that complies with the standard criteria of acceptability, with a Cronbach's alpha of .86 and a correct item-total-scale average correlation coefficient of .50 (Pastorelli & Picconi, 2001). The scale consists of 19 items, each of which is evaluated on a five-position continuum: 1 is not capable at all, 2 is not capable, 3 is with average capability, 4 is very capable, and 5 is fully capable. Depending on the total raw score obtained, each participant's level of self-efficacy was classified in one of the following categories: 18–56 is very low, 57–64 is low, 65–70 is average, 71–76 is high, and 77–95 is very high.

Procedures

Informed consent to the research was collected from the adult and underage students, and also from the parents of the latter, prior to the completion of the questionnaire. A team of researchers and trained teachers administered the questionnaire (in paper form) in the schools before a regular lesson. Voluntary completion and total anonymity were guaranteed, and researchers and teachers remained present in the classrooms to answer any questions. The completion took, on average, 30 minutes per class. The response rate was 93.3%.

Data analysis

Absolute frequencies and percentages were calculated to summarize the sample's behaviours with respect to gambling and the psychological needs of adolescents. Pearson's chi-squared tests were used to compare playing behaviours and motivations of females versus males, underage versus adults, and non-problematic gamblers versus at-risk/problematic gamblers. T-tests were used to assess differences in scores on the self-efficacy scales, based on age, gender, and the severity of gambling. The binomial logistic regression technique was employed to identify the major risk factors associated with excessive gambling. The method used, called backward stepwise, involves the construction of a model that includes all the regressors that could explain the dependent variable covered by the study; then, it proceeds, step-by-step, to eliminate an independent variable, starting from the one associated with the least statistically significant dependent variable. For example, during exploratory analyses, the age variable (considered both a quantitative variable and a 'major' and 'minor' dichotomy variable) was not significant in explaining changes in the dependent variable, so it was not included in the model. The dependent variable (SOGS-RA outcome) was dichotomized into two categories: (1) subjects with a total score of 0 to 1 were classified as 'non-problematic players,' and (2) subjects with a score of 2 or more were classified as 'at-risk/problematic players.' After evaluating their frequencies, the three self-efficacy scales were recoded into dichotomy

variables that took the following values: (1) value 0 if the outcome of the respective scale was very low or low (up to a raw score of 64 for the self-effective scale, 53 for the perceived scale of social self-efficacy, and 50 for the perceived scale of regulatory self-efficacy); and (2) value 1 if the outcome was medium, high, or very high. The final constructed model consists of five independent variables: male gender, online play, low level of perceived academic self-efficacy, low level of perceived social self-efficacy, and low level of perceived regulatory self-efficacy.

All statistical analyses were conducted using SPSS Statistics – version 25.

Results

Demographics, gambling behaviour, and motivations

As stated earlier in the paper, this study involved 560 adolescents (286 males and 274 females) between the ages of 14 and 20 (M = 16.23; SD = 1.23). The main socio-demographic data of the sample are presented in Table 1.

The sample is balanced against the gender variable, and the age distribution was similar across the male and female genders. Those who said they were of a foreign nationality were 76 (13.6%), while the remaining 484 (86.4%) participants were of Italian nationality. When asked to indicate the socio-economic status of their family, taking into account the assets owned and the professions of their parents, 59.3% of the adolescents responded by indicating an average status, 19.6% a high one, and 14.8% a low status. The majority of respondents said they had, on average each week, the availability of up to 20 euros (44.3%), 21 to 30 euros (25.7%). Half of the sample had the option of using a credit card (in 23.8% of cases, it was registered to themselves and in 26.3% of cases, to a family member) and the other half did not.

Table 1. Socio-demographic data of the participants.

Gender	
Male	274(48.9)
Female	286(51.1)
Age	
14	79(14.1)
15	150(26.8)
16	108(19.3)
17	77(13.8)
18	95(17)
19	36(6.4)
20	15(2.7)
Nationality	
Italian	484(86.4)
Other	76(13.6)
Family socio-economic status	
Very low	20(3.6)
Low	83(14.8)
Middle	332(59.3)
High	110(19.6)
Very high	15(2.7)
Money for week	
Up to 20 euro	248(44.3)
21–30	144(25.7)
31–40	39(7.0)
41–50	65(11.6)
51–60	23(4.1)
61–70	5(9.0)
71–80	16(2.9)
More than 80	20(3.6)
Credit card	
Personal credit card	133(23.8)
Family credit card	147(26.3)
No	280(50)

Data on gambling behaviour and differences between males and females are shown in Table 2. Four hundred thirty-one adolescents (77%) reported having gambled at least once in the last year: 87.2% of males and 67.1% of females. The difference was found to be statistically significant: χ^2 (1) 31.97; < .001. These results are higher than in the most recent national surveys because all types of games (including lotteries and card games with family or friends for money, e.g. poker) were included, and the sample also involved 146 adult subjects. Among the adolescents surveyed, 75% said they had gambled online at least once, 42.2% of males and about half of female players (50.5%), with a difference that was not statistically significant: χ^2 (1) = 2.24; p = ns. Males were more dedicated to sports betting (62.8%), card games for money (47.8%), and lotteries, including instant lotteries (33.5%). Card games for money were the type of gaming most chosen by the teens surveyed (42.7%), followed by lotteries and scratch cards (35.9%), and the Powerball lottery (35%). Statistically significant differences were found between males and females related to card games for money, sports betting, slot machines, and casino games, which all attracted more male teenagers. However, there was no statistically significant difference for instant lotteries (including scratch cards) and the Powerball lottery. Overall, 94.1% of females and 80.7% of males (87.5% of the total sample) were found to have no problem with gambling based on their SOGS-RA scores. There were 49 'at-risk' players (8.8%): 38 males (13.9%) and 11 females (3.8%). On the other hand, there were 21 (3.8%) 'problematic' players: 15 males (5.8%) and 6 females (2.1%). There was a statistically significant difference between males and females compared to the three outcomes of SOGS-RA: χ^2 (2) = 23.19; < .001. However, there was no significant difference between adults and minors: χ^2 (2) = 2.37; p = ns.

The main reasons for gambling, reported by the total sample, the male group, and the female group are shown in Table 3. Some significant differences were found based on gender, but not on age group. Males, compared to females, gamble for the desire to earn money (50.6%), for the taste of the challenge (27.6%), and to imitate friends (12.6%). Females, more than males, choose to gamble because of boredom (25.1%) and because their family members do it (11.8%). Nearly 40% of males and females cited fun as one of the main motivations, with no statistically significant difference.

Table 4 shows the reasons for gambling in relation to the total sample and the two different types of players: non-problematic players, on the one hand, and at-risk and problematic players on the other. At-risk and problematic players, unlike non-problem gamblers, gamble to make money (67.2%), for the taste of the challenge (38.8%), and to imitate friends (16.4%).

Table 2. Presence/absence of gamblers.

	Total simple	Males	Females	χ^2	p value
Do you play at least once per year?					
Yes	431(77)	23(87.2)	192(67.1)	31.87	p <.001
No	129(23)	35(12.8)	94 (32.9)		
Gambling, at least once per year					
Card playing for money (e.g. poker)	196(45.5)	114(47.8)	82(42.7)	10.29	p <.001
Sports wagering	191(44.3)	150(62.8)	41(21.3)	101.67	p <.001
Lotteries and scratch cards	149(34.5)	80(33.5)	69(35.9)	p = ns	
Powerball lottery	135(31.3)	68(28.4)	67(35)	p = ns	
Slot-machines	93(21.3)	67 (28)	2 (13.5)	23.84	p <.001
Casinos	62(14.4)	49(20.5)	13(6.8)	25.28	p <.001
Do you play online at least once per year?*					
Yes	325(75)	138(42.2)	97 (50.5)	p = ns	
No, only off-line	106(24.6)	101(34.5)	95 (49.5)		
Results of SOGS-RA					
No problem with gambling	490(87.5)	22(80.7)	269(94.1)	23.19	p <.001
Risk player	49 (8.8)	38(13.9)	11(3.8)		
Problematic player	21(3.8)	15(5.8)	6 (2.1)		

* Percentages calculated based on those who gamble at least once per year.

Table 3. Motivation to gambling in the total sample and in the male and female groups.

Motivation	Total Sample	Males	Females	χ^2	p value
For pure fun	164(37.6)	91(38.1)	73(37.4)	p = ns	
It's a challenge	102(23.5)	66(27.6)	36(18.5)	5.00	p <.05
As a distraction from my problems	42(9.7)	23(9.6)	19(9.7)	p = ns	
To make money	171(39.4)	121(50.6)	50(25.6)	28.08	p <.001
For boredom	86(19.8)	37(15.5)	49(25.1)	6.29	p <.05
Because my friends do it	38(8.8)	30(12.6)	8(4.1)	9.60	p <.01
Because my family members do it	38(8.8)	15(6.3)	23(11.8)	4.09	p <.05
Other reason (curiosity, to try it, passion for sport, etc.)	23(5.6)	14(6.3)	9(4.7)	p = ns	

Table 4. Player gambling motivation in the total sample, non-problem gamblers, at- risk/problem gamblers.

Motivation	Total Sample	Non-problem gamblers	At-risk/problem gamblers	χ^2	p value
For pure fun	164(37.6)	144 (39.2)	20(29.9)	p = ns	
It's a challenge	102(23.5)	76(20.7)	26(38.8)	10.32	p <.001
As a distraction from my problems	42(9.7)	34(9.3)	8(11.9)	p = ns	
To make money	171(39.4)	126(34.3)	45(67.2)	25.58	p <.001
For boredom	86(19.8)	76(20.7)	10(14.9)	p = ns	
Because my friends do it	38(8.8)	27(7.4)	11(16.4)	5.82	p <.05
Because my family members do it	38(8.8)	34(9.3)	4(6)	p = ns	
Other (curiosity, to try it, passion for sport, etc.)	23(5.6)	20(5.5)	3(4.5)	Not applicable	

Self-efficacy

Table 5 shows the average sample scores in the self-efficacy scales used in the research. When compared to the socio-demographic variables investigated, there are some significant differences with respect to gender only and not to the age group. In particular, males show greater social self-efficacy than females: 49.17 vs. 45.81; t = 4.70; p < .001. In contrast, female adolescents show greater self-regulatory efficacy: 45.90 vs. 41.55; t = −5.33; p < .001.

Table 6 shows, in addition to the average sample scores in the self-efficacy scales, the comparison between non-problematic players, on the one hand, and at-risk and problematic players, on the other. In all three self-efficacy scales, the scores of non-problematic players are higher than those of at-risk/problematic players, and the difference was statistically significant.

Predictive factors of at-risk/problematic gambling

Table 7 presents the results of the binomial logistic regression analysis, the regression coefficients with their standard errors and statistical significance levels, and, to facilitate their interpretation, the

Table 5. Self-efficacy average scores: total sample, males-females, and age groups.

Self-efficacy	Total sample M (SD)	Males N = 274	Females N = 286	t (df)	Age 14–17 (N = 414)	Age 18–20 (N = 146)	t (df)
Social self-efficacy	47.46 (8.62)	49.17(8.23)	45.81* (8.66)	4.70 (558)	47.15 (9.07)	48.32 (7.13)	−1.41 (558)
Academic self-efficacy	53.84 (12.27)	53.48 (11.55)	54.19 (12.93)	−.69 (558)	53.34 (12.84)	55.27 (10.40)	−1.63 (558)
Self-regulatory efficacy	43.77 (9.89)	41.55 (9.35)	45.90* (9.93)	−5.33 (558)	43.88 (10.02)	43.45 (9.53)	.451 (558)

* p <.001.

Table 6. Self-efficacy average scores for the total sample, non-problem gamblers and at-risk/problem gamblers.

Self-efficacy	Total sample M (SD)	Non-problem gamblers N = 274	At-risk and problem gamblers N = 286	t (df)
Social self-efficacy	47.46 (8.62)	47.76 (8.54)	45.37* (8.91)	2.17 (558)
Academic self-efficacy	53.84 (12.27)	54.42 (12.37)	49.81** (10.77)	2.96 (558)
Self-regulatory efficacy	43.77 (9.89)	44.62 (9.80)	37.83*** (8.37)	5.51 (558)

* p <.05; ** p <.005; *** p <.001.

Table 7. Esults of logistic regression.

	β	StandardError	Odds Ratio	95% C.I.	
				Lower	Upper
Male	1.337**	.306	3.809	2.092	6.936
Self-regulatory efficacy	−.683*	.307	.505	.276	.923
Academic self-efficacy	−.715 ns	.505	.489	.182	1.316
Social self-efficacy	−.734*	.350	.480	.242	.953
Online gaming	.956 **	.281	2.600	1.498	4.514

ns, $p >.05$; *$p <.05$; **$p <.001$.

odds ratio with confidence intervals set at 95%. As the reader can see, gender is the most predictive and problematic variable of at-risk gambling. Males have, on average, odds that are 3.8 times higher than those of females of being at-risk/problematic players. Online gaming was also found to be predictive of at-risk/problematic gambling, and this result highlights how the probability of being an excessive player is greater in teens who gamble through electronic tools (computers, tablets, and smartphones); specifically, the odds of being an at-risk/problematic player is 2.6 times greater for those who only play online. Perceived self-efficacy was predictive of an excessive gambling risk in all three dimensions considered in this study (social, self-regulatory, and academic). An average, high, or very high score in each of the three scales, when compared to a low or very low score, leads to a halving of the probability of being an at-risk and problematic gambler, with the same score on the scales of self-efficacy and equal to all other variables included in the model. However, this halving was statistically significant only in the case of perceived social self-efficacy and perceived self-regulatory efficacy, but not in the case of academic self-efficacy.

Discussion

Through this study, we proposed to investigate the prevalence of gambling risk in a sample of Italian teenagers, taking into account differences based on gender and the association with risk factors (gender and online gaming) and protection (self-efficacy). Consistent with our first and second hypotheses, and with the results of numerous previous research (e.g. Weidberg et al., 2018), gambling behaviour and some types of gambling were found to be more prevalent in male adolescents than in females.

In addition, problem gamblers were present in greater numbers in the male subsample than in the female subsample, as also noted by other surveys (Andrie et al., 2019; Donati et al., 2013). Boys are more involved than girls in all types of games, except lotteries (including instant lotteries or scratch cards) and the Powerball lottery. Other research carried out on samples of adolescents (Hardoon & Derevensky, 2002), as well as adults (Salonen et al., 2018), have identified a greater propensity of males to prefer all types of games, except lotteries and scratch cards.

The motivations for gambling seem to distinguish at-risk and non-risk adolescents and are different based on gender. Females seem more prone to playing in order to decrease boredom and are more influenced by parenting patterns.

These data seem to confirm the tendency in girls to use the game as a strategy for regulating their mood and emotional states (Weidberg et al., 2018), while other studies are needed to understand why females can be more sensitive to imitating their parents. Michael and Ben-Zur (2007) found that with regard to risky behaviours, males are more influenced by peers, while females are influenced by family members (Badenes-Ribera et al., 2019; Longobardi et al., 2017; Marengo et al., 2018). According to previous literature, it also seems that males are more involved in gaming for self-enactment motivations). A comparison between adolescents at risk and not at risk of pathological gambling reveals that some motivations, such as obtaining a reward in the form of money, considering the game a challenge, and imitating friends, are more associated with the risk of pathological gambling. Taken globally, these data seem to indicate that different motivations

support gambling; however, some of them may be particularly involved in increasing the risk of pathological gambling. Specifically, the possibility to earn money and the gaming being considered a challenge could increase reward behaviour underlying behavioural addictions, while peer imitation seems to indicate the socially oriented nature of gambling in adolescence and the possibility of risky behaviours being shared and developed within socialization processes (Lynch et al., 2004). In this regard, among social learning theorists, Bandura (1977b) suggested that observational learning and modelling play a leading role in the acquisition of certain behaviours. Teenagers are sensitive to the imitation of significant patterns identified among peers, but sometimes also in parents, siblings, or other relatives, so it has been assumed that observation and modelling are also involved in the acquisition and maintenance of gambling, including that which is at-risk/problematic (Hardoon & Derevensky, 2002).

Moreover, the importance of the utilitarian and economic motivation of gambling in adolescents in the Italian context (without an analysis of gender and type of player differences) has already been highlighted by other studies (e.g. Zenarolla, 2017). It seems that these adolescents see gambling as an easy way to earn money effortlessly.

Some gender differences also emerged from the administration of self-efficacy scales, and, in more detail, the authors observed a greater level of perceived social self-efficacy in the male group than in the female one, and a greater level of perceived self-regulatory efficacy in the female group compared to male one. Male adolescents of the sample, therefore, felt more effective in social relationships than their female peers, while female adolescents, compared to their peers of the opposite sex, felt more able to not give in to peer pressure as far as risky behaviour is concerned. This could be one of the factors that helps explain the lower involvement of girls in gambling in general and their lower presence in the group of at-risk/problematic players. On the other hand, at-risk /problematic players, compared with non-problem players, manifested less self-efficacy in all three dimensions considered by this study (i.e. social, self-regulatory, and academic).

The results of the logistic regression showed the important role of the male gender and of online gaming in predicting at-risk/problematic gambling, in line with previous research (Dickson et al., 2008; Wong & So, 2014). As confirmation of our third hypothesis, a low level of self-efficacy, in the three dimensions considered in this study, is associated with at-risk/problematic gambling. Instead, having effective social and academic skills and the ability to withstand peer pressure decreases the likelihood of falling into the trap of at-risk and problematic gambling. These results are in line with socio-cognitive theory (Bandura, 1997, p. 2006), which attributes self-efficacy a significant role for personal and social well-being in adolescence, including the avoidance of risky behaviours. The three dimensions of self-efficacy considered in this study appear to play an important role as at-risk /problem gambling protection factors, and this could be confirmed by future research.

Study limitations and implications of the study

The study has several limitations. First, the data are self-reported and therefore liable to well-known biases, regarding the authenticity of the answers provided, the social desirability, and the reliability of the reported memories. Second, the sample employed in the study is not representative of the Italian adolescent population, and, therefore, a great deal of caution is needed in generalizing the results. Moreover, the numbers of players and 'problematic' gamblers are not high; this has obviously influenced the statistical analysis and gender comparison. Third, the tools we used to collect the data, although adapted to Italian adolescents, were originally designed for adults (the SOGS-RA) and children (the three self-efficacy scales). As a result, the words used in the original versions have been modified to be better suited to the adolescent population. Finally, this is a cross-sectional study, and longitudinal studies would be needed to verify the predictive relationships identified by this study. Future research should use more rigorous methodologies to examine these reports. Despite these limitations, the results of this study provide useful guidance for the design of problematic gambling intervention programmes. They should first cover all the years of high school, which, in Italy, includes

the age group of 14–19 years. We have seen the widespread gambling that occurs among minors, such as in the vocational schools of this study sample. This study showed that boys and girls gamble but with different motivations and habits. As a result, groups of male and female adolescents could benefit from prevention programs with, at least in part, differentiated purposes and activities. Prevention programs should also address legal aspects (e.g. information on laws and on the nature of penalties in the event of infringements) because minors are often unaware of breaking the law when gambling. Our study also suggests that the use of electronic means (computers, tablets, and smartphones) play a key role in predicting at-risk/problematic gambling behaviour, so prevention programs should not be lacking of so-called media education; they need to encourage the conscious and responsible use of technological tools to defend against gambling-related advertising. Finally, our results support the need to promote interventions aimed at enhancing the personal resources and relational skills of adolescents, in order to increase their sense of self-efficacy and their accountability in terms of their own behaviour. All activities to raise the level of self-efficacy can help to reduce the risk of excessive play, for example, activations (such as role-playing; group discussions; activities with the use of cards, stories, and images, etc.) for learning how to resist peer pressure or for learning to build and maintain good relationships with others. Enhancing academic skills and the ability to organize one's studies can also be useful in preventing at-risk and pathological gambling.

Disclosure statement

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