



# A large-scale national study of gambling severity among immigrant and non-immigrant adolescents: The role of the family



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## HIGHLIGHTS

- Little is known about the link between immigrations status and adolescent gambling.
- This study used a large-scale nationally representative youth sample.
- First-generation immigrants had higher gambling severity.
- There was an interaction between family structure and first-generation immigrants.
- Not living with two parents increase gambling severity in first-generation immigrants.

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## ABSTRACT

**Aim:** The primary aim of the present study was to examine the association between immigrant generation, family sociodemographic characteristics, and problem gambling severity in a large-scale nationally representative sample of Italian youth.

**Method:** Data from the 2013–2014 Health Behaviour in School-aged Children (HBSC) Survey were used for cross-sectional analyses of adolescent problem gambling. Self-administered questionnaires were completed by a representative sample of 20,791 15-year-old students. Respondents' problem gambling severity, immigrant status, family characteristics (family structure, family affluence, perceived family support) and socio-demographic characteristics were individually assessed.

**Findings:** Rates of adolescent at-risk/problem gambling were twice as high among first generation immigrants than non-immigrant students; the odds of being at-risk/problem gamblers were higher among first-generation immigrants than adolescents of other immigrant generations or non-immigrant. Not living with two biological or adoptive parents appears to be a factor that increases the risk of becoming a problem gambler in first generation immigrants.

**Conclusions:** Immigrant status and family characteristics may play a key role in contributing to adolescent problem gambling.

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## 1. Introduction

Adolescent problem gambling is an emerging public health issue in many European countries and a recent study has shown that 1.6–5.3% of adolescents living in nine European countries had probable problem gambling (Molinaro et al., 2014). Adolescent problem gamblers (as with adult problem gamblers) generally appear to be a heterogeneous

group with the unique correlates and weightings of the risk factors contributing to problem gambling differing among individuals. Youth problem gambling has been associated with significant health and psychosocial problems, including depressive symptoms, increased risk for other addictions, poor general health and criminal behavior (Blinn-Pike, Worthy, & Jonkman, 2010). One recent study highlighted that while gender and age are the two sociodemographic factors consistently associated with adolescent gambling, surprisingly little research has been carried out with regard to immigration status (Hayer and Griffiths, 2016). Despite the growing number of immigrants in Italy

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(ISTAT, 2016), few studies have investigated problem behaviors of immigrant and non-immigrant adolescents. The few studies carried out mainly concentrate on drug use (e.g., Cristini, Scacchi, Perkins, Bless, & Vieno, 2015) or health status (e.g., Vieno, Santinello, Lenzi, Baldassari, & Mirandola, 2009). Consequently, the principal aim of the present study was to examine differences in problem gambling between immigrant and non-immigrant adolescents in Italy.

Research has shown that migrant status increases the likelihood of problem gambling due to the experience of acculturative stress (Ellenbogen, Gupta and Derevensky, 2007) and specific cultural, familial, and religious backgrounds (Hayer and Griffiths, 2016). Immigration in European countries such as Italy is relatively different from that of USA and Canada (Sam, Vedder, Liebkind, Neto, & Virta, 2008). For instance, Italy was a country of emigration until the 1980s. However, in the last 20 years, there has been a significant increase in the number of immigrants, with the number of immigrants rising from 2.7% in 2002 to 8.3% in 2016 (ISTAT, 2016). In the 2014, 14.9% of births in Italy were to immigrant parents (ISTAT, 2016). In contrast to other European countries, immigration to Italy did not begin during a period of reconstruction and economic development. Furthermore, unlike France or the United Kingdom, Italy has not experienced immigration from old Colonies by immigrants who speak the same language. In fact, the largest numbers of immigrants were almost all from the developing countries and from Eastern Europe. In Italy, migrants are generally characterized by low socio-economic status (SES) and have greater access to unskilled and semi-skilled manual jobs (Fullin & Reyneri, 2011). Finally, whereas Italy devotes resources to programs geared to integration, its laws contribute to keeping immigrants on the margins, denying them permanent residence and restricting their ability to establish roots, access citizenship, and develop a sense of belonging (Calavita, 2005).

Theories on the impact of immigration status on problem behaviors in adolescence have suggested both a risk and resilience perspective. According to the risk perspective, immigrants are frequently confronted with stress resulting from the process of migration, for instance the loss of family and friends, customs, surroundings, and the need to adapt to a new cultural context (Guarnaccia & Lopez, 1998). The risk perspective also highlights that immigrant adolescents are frequently confronted with discrimination that may negatively affect psychological functioning (Pascoe & Smart Richman, 2009).

Disaggregating the immigrant category by generational status is particularly important as research suggests risk behaviors are not necessarily found among foreign-born youths (first generation), but among the children of immigrants, or the second generation (Camarota & Vaughan, 2009). For ease of discussion, throughout the paper the terms “first generation immigrant” and “second generation immigrant” are used to refer to foreign-born individuals and native-born children of foreign-born parents, respectively. Furthermore, foreign-born youths have the challenge of adopting norms and values from their adoptive country, thereby juggling the demands of two cultures, and which can make their adolescent years more precarious (Harris, 1999). The overall stress associated with adaptation can be difficult and may result in increased risky health behaviors (Cristini et al., 2015). To the best of the authors' knowledge, no studies have ever investigated the role of immigrant generation (i.e., first and second generation) in contributing to adolescent gambling. Within this risk perspective, it is hypothesized that immigrant adolescents (first and second generation) will show more gambling problems than non-immigrant adolescents.

The effect of immigration on adolescent gambling may also vary with family sociodemographic characteristics. The combination of financial, occupational, and social stressors as a consequence of migration, is likely to favor the stage for intergenerational conflict and stress in migrant families (Guarnaccia & Lopez, 1998). Children in immigrant families are more likely to live in poverty and have a parent who did not complete high school (Fields, 2003). The perceived socioeconomic status (SES) may reflect adolescent's perceptions of their social

disadvantage and life chances relative to others (McCulloch, Stewart, & Lovegreen, 2006). Research involving first-generation immigrants has demonstrated that subjective SES is more highly associated with alcohol and cannabis use (Hamilton, van der Maas, Boak and Mann, 2014). In addition, changes in family structure following immigration may impact parental ability to perform tasks of support, monitoring, and involvement in their children's lives (Hussey et al., 2007). Previous studies have found that living with a single parent (typically the mother) is more common among immigrant adolescents (i.e., third generation and higher Asian and Latino adolescents), and increases the likelihood of being involved in co-occurring sex and drug use among adolescent immigrants (Hussey et al., 2007). In regard to the association between these family socio-demographic characteristics (e.g., family structure, family socioeconomic status) and adolescent problem gambling, previous studies have found that adolescents who perceive their financial family status as low were significantly more likely than adolescents who perceived their financial family status as medium/high to be at-risk gamblers (Canale et al., 2016a). Moreover, adolescents who live with unrelated others or a single parent are significantly more likely than adolescents who live with two parents to be problem gamblers (Canale et al., 2016a).

Finally, non-gamblers and social gamblers have significantly higher mean scores on family support (emotional, informational, feedback and reciprocal support) compared with at-risk and pathological gamblers (Hardoon, Gupta, & Derevensky, 2004). Two family characteristics that appear to increase adolescent gambling – living with unrelated others or a single parent (Canale et al., 2016a) and in poor families (Canale et al., 2016a) – also vary by immigrant status (Hamilton et al., 2014; Hussey et al., 2007). Therefore, specific investigation into the family structure and financial family status surrounding immigrant adolescents and problem gambling in youth warrant empirical consideration.

### 1.1. The present study

As the aforementioned literature demonstrates, no studies have been carried out into adolescent gambling among immigrants in Italy. Therefore, the following study addresses this gap by investigating whether immigrant adolescents in Italy are more likely to be at-risk and problematic gamblers when compared with non-immigrant adolescents. Two specific questions are central to the analysis. First, what is the relationship between immigrant status and patterns of adolescent gambling? Based on prior studies in other countries (Delfabbro, Lahn, & Grabosky, 2005; Petry & Tawfik, 2001; Westphal, Rush, Stevens, & Johnson, 2000), it was hypothesized that immigrant adolescents will be more likely to report higher levels of at risk/problem gambling than non-immigrant adolescents. Second, what family characteristics might account for this relationship? The study also examined the association between immigrant generation, family sociodemographic characteristics (using the Family Affluence Scale [FAS] and family structure) and problem gambling severity. In particular, the study examines whether the association between FAS, family structure and at-risk/problem gambling vary with immigrant generation. It is hypothesized that the association between FAS and gambling will vary with immigrant generation, and that the variations will be most evident between adolescents of immigrant generations. In addition, it was hypothesized that the associations involving living with no two biological or adoptive parents and problem gambling severity will vary with immigrant generation and that the association will be stronger among immigrant adolescents.

## 2. Methods

### 2.1. Participants and procedure

Data in the present study were collected from Italian students who participated in the 2013–2014 ‘Health Behaviour in School-aged

Children' (HBSC) Survey, a cross-national collaborative study coordinated by the World Health Organization (Currie, Gabhainn, Godeau and International HBSC Network Coordinating Committee, 2009) (see <http://www.hbsc.org> for more details). The survey utilized a 'sample clustering' approach (Lazzeri et al., 2013; Thompson, 1999), and comprised items related to participant socio-demographic characteristics, risk factor exposure, and engagement in potential chemical and behavioral addictions (including gambling). Although the study comprised data from adolescents aged 11, 13 and 15 years, only those aged 15 years (i.e., Grade 10) were asked questions relating to gambling and the sample was nationally representative of the age group.

Following the rules agreed internationally, one-stage cluster sampling was used with classes within schools as primary sampling unit. Using the database of the National School Office, schools and classes were stratified by region and in each of them by grade (middle and high schools). The classes were then selected using sampling with probability proportional to size. The sample size for each region was about 1200 children for each age group (11, 13 and 15 year old students) corrected for the general population of students. To compensate for the differences in the children's ages and for students' expected non-participation, an over-sampling from 10% to 25% was applied in each age group. Of the total sampled classes, 91% participated in the survey. Non-participating classes were equally distributed concerning the location and the type of school.

The sample comprised 20,791 students (slightly more male, 50.3%) across 1050 different schools. Prior to the start of the study, consent for adolescents to participate in the study was provided by both the school director and by parents of the participants. The survey took about 50 minutes to complete, and was voluntary and anonymous, and was administered during normal school time by the classroom teachers. The University of Turin's Ethics Committee granted ethical approval for the study.

## 2.2. Measures

The survey comprised measures drawn from standardized questionnaires of the HBSC international group. The present study used data related to students' reports of problem gambling severity and sociodemographic characteristics. In Table 1, all factors are listed in order to present the operationalization of the variables included.

### 2.2.1. Problem gambling severity

The 12-item South Oaks Gambling Screen-Revised for Adolescents SOGS-RA (Italian version: Chiesi, Donati, Galli, & Primi, 2013) was used to assess problem gambling. The SOGS-RA items assess negative consequences and emotions associated with gambling behavior over a past-year timeframe. The instrument had adequate internal reliability in the present study ( $\alpha = 0.78$ ; 95% CI = 0.78–0.80). The original scoring system of Winters, Stinchfield, and Kim (1995) was used to estimate prevalence rates over the past year. The scoring was as follows: 0–1 = "no problem", 2–3 = "at-risk", and 4 or

more = "problem gambling". For analysis purposes, a new group of "at-risk-problematic gamblers" was created by merging those classed at-risk gamblers with those classed as problem gamblers. The remainder was therefore labeled 'non-problematic gamblers' (i.e., Carbonneau, Vitaro, Brendgen, & Tremblay, 2015). This new dichotomized grouping was created because previous studies have found that problem gamblers and those classed as being 'at-risk' appear to exhibit similar characteristics [e.g. impulsivity, depression, etc., (Blinn-Pike et al., 2010)].

### 2.2.2. Immigrant status

Students were asked in three separate items whether they and each of their mother and father were born in Italy or abroad: "In which country were you/your mother/your father born?" (1-country of residence; 2-other; for mother and father's country of birth, adolescents were given an open question to write in which country). Previous studies have demonstrated that children as young as 11 years provide valid responses to these questions, showing that the amount of agreement between children's responses and their parents is almost 100% (Nordahl, Krølner, Páll, Currie, & Andersen, 2011). Adolescents were considered a first-generation immigrant if they were born outside of Italy. First-generation immigrants were not categorized on the basis of their self-reported country of origin. The relatively low number of immigrant children in the sample did not allow stratification by country of origin<sup>1</sup>. To be considered as a second-generation immigrant, adolescents had to have been born in Italy and have at least one parent born outside of Italy (Stevens et al., 2015).

### 2.2.3. Perceived family support

Perceived family support was assessed using four items (a sub-scale of the Multidimensional Scale of Perceived Social Support) (Zimet, Dahlem, Zimet, & Farley, 1988). The scale includes items such as: "I get the emotional help and support I need from my family". Responses were rated on a seven-point scale (1 = strongly disagree to 7 = strongly agree). Alpha reliability for the 4-item scale was 0.89 (95% CI = 0.89–0.90). Responses were averaged in order to assess family support.

### 2.2.4. Sociodemographic characteristics

Socioeconomic status (SES) was assessed using the Family Affluence Scale (FAS) (Boyce, Torsheim, Currie, & Zambon, 2006). The FAS is a proxy measure for assessing socioeconomic status as it concerns familial (material) wealth by asking questions relating to number of family holidays over the past 12 months, the number of household cars, the number of home computers in the house, and whether participants had a bedroom of their own. Previous studies indicate the scale has good content validity and external reliability and may be a more reliable affluence indicator than parent education or occupation when asked of adolescents (Boyce et al., 2006). Scores ranged from zero to seven, and were categorized so scores of 0 to 4 = low, 5 to 6 = moderate, and 7 = high. The adolescents' family structure comprised two types: those adolescents who lived with two biological or adoptive parents or those that lived in other types of family set-up (e.g., single-parent families) (Hamilton et al., 2014). Although there are a variety of intervening and moderating conditions that influence whether family structures are associated with negative child

**Table 1**  
Operationalization of study variables.

Variable	Values
Gender	0 = Females      1 = Males
Family structure	0 = Two biological or adoptive parents      1 = Other family types
1st generation	0 = No      1 = Yes
2st generation	0 = No      1 = Yes
FAS	0 = Low      1 = Medium      2 = High

<sup>1</sup> Parallel analyses were conducted using variables that identified where most of the first generations immigrants came from. First-generation immigrants were categorized into two groups by grouping them into different subgroups with common cultural backgrounds (i.e., born in Europe/USA/Canada/Australia and born in other countries). Sample sizes are still too small for sensitivity sub-analyses within immigrant status. Of the first generation immigrants, 0.5% (n = 89) were born in Europe/USA/Canada/Australia and 6.2% (n = 1254) were born in other countries. Analyses are available from the corresponding author.

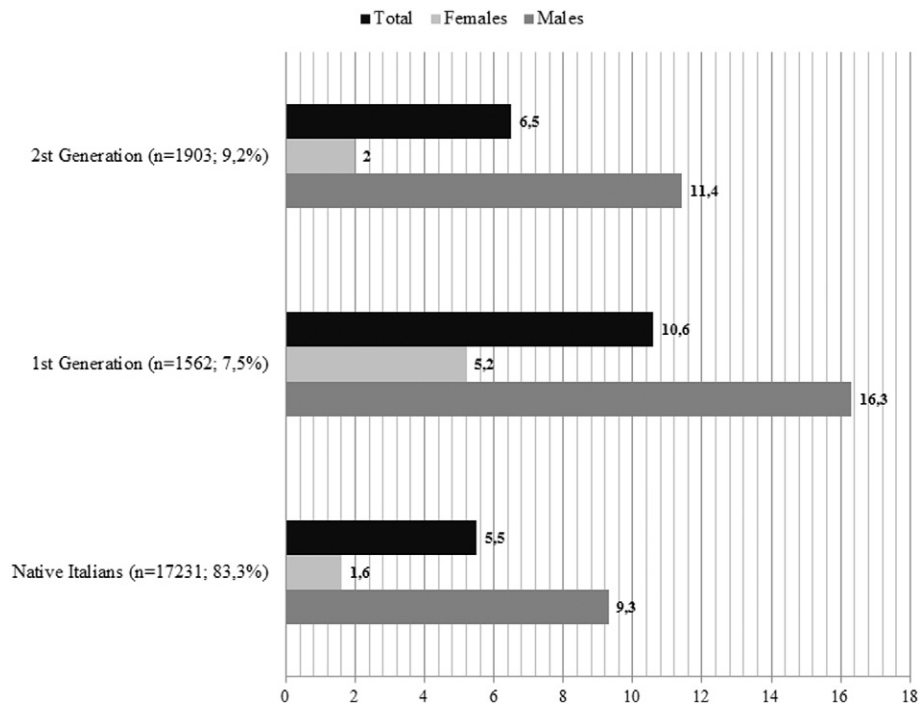


Fig. 1. Prevalence of at-risk/problem gambling among immigrant and nonimmigrant males and females.

outcomes (Amato, 2010), previous studies showed significantly elevated rates of almost all types of victimization among children in both nontraditional family types, relative to those living with two biological/adoptive parents (Turner, Finkelhor, Hamby, & Shattuck, 2013).

### 2.3. Statistical analysis

A multilevel logistic regression analyses (random intercept) was used to test for the possible contribution of the variables under investigation (i.e., sociodemographic characteristics, family type, and immigrant status) to at-risk/problem gambling. The analysis also took into account the data's hierarchical structure (i.e., individuals clustered within schools). All confidence intervals were set at the 95% level, so that the two-way interactions between each variable and immigrant status could be tested (i.e., FAS and family structure). The steps taken in the regression analysis included: transforming the predictor and moderator variables by standardizing (i.e., variables centered to a mean of zero), creating interaction terms, and structuring equations. The statistical analyses were performed in HLM version 6 (Raudenbush and Bryk, 2002).

## 3. Results

### 3.1. Descriptive statistics

Descriptive statistics provided in Table 2 indicate that 7.5% of adolescents are first-generation immigrants, and 9.2% are second-generation immigrants. Regarding sociodemographic differences, the high school students included in the study are quite homogeneous in terms of immigrants' generation for gender [first-generation immigrants (49% females), second-generation immigrants (48% females)], family structure [first-generation immigrants (67% living with two biological or adoptive parents), second-generation immigrants (70% living with two biological or adoptive parents)], and socioeconomic status [first-generation immigrants (20% high FAS), second-generation immigrants (23% high FAS)]. The overall at-risk/problem gambling prevalence rate among 15 year-old Italian students is 6.0%. In addition, rates of adolescent at-risk/problem gambling are twice as high among first-generation immigrants than non-immigrant students. Fig. 1 shows the prevalence of gambling among immigrant and non-immigrant males and females. Across gender, the highest prevalence of at-risk/problem gambling is observed among first-generation immigrants (males = 16.3%, females = 5.2%).

**Table 2**  
Statistical description of the variables in the study among Italy-born and immigrant adolescents in Italy.

	Native Italians (n = 17.231, 83.3%)	First generation immigrants (n = 1562, 7.5%)	Second generation immigrants (n = 1903, 9.2%)
Sociodemographic characteristics			
Males	50.6%	49.0%	47.7%
Two biological or adoptive parents	71.5%	67.4%	69.6%
FAS			
Low	21.2%	27.9%	22.8%
Medium	56.2%	52.2%	54.6%
High	22.6%	19.9%	22.6%
Perceived Family support [mean and (SD)] <sup>2</sup>	5.83(1.49)	5.33(1.79)	5.51(1.66) <sup>a</sup>

<sup>a</sup> Range: 1–7.

<sup>2</sup> Parallel analyses were conducted to control the effects of other adolescent risky behaviors (current smoking, lifetime drunkenness, and number of physical fights). There were no significant differences overall in the result (see Table S1 in the "Supplementary section" for more details).

### 3.2. Results of multilevel logistic regression analyses

Table 3 shows the results of the multilevel logistic regressions. Males are significantly more likely than females to be at-risk/problem adolescent gamblers. Among family variables, students who perceived more parental support have lower odds of at-risk/problem gambling than students who perceived less parental support. Medium-high affluent adolescents are significantly less likely than adolescents with lower FAS to be at-risk/problem gamblers. In addition, adolescents who do not live with two biological or adoptive parents are significantly more likely than adolescents who lived with two biological or adoptive parents to be at-risk/problem gamblers. Furthermore, being a first-generation immigrant is positively associated with adolescents' problem gambling severity than being non-immigrants, while being a second-generation immigrant is not significantly associated with at-risk/problem gambling. Finally, there is a positive interaction between family structure and being a first-generation immigrant, with a stronger association between not living with two parents and problem gambling severity for first-generation immigrants, but there is no statistically significant interaction of family structure and being a second-generation immigrant, indicating no difference in the association between not living with two parents and problem gambling severity among second-generation immigrant students. In contrast to the findings for family structure, the association between subjective FAS and at-risk/problem gambling does not significantly vary with immigrant status.

## 4. Discussion

The present study is the first national adolescent problem gambling prevalence survey conducted in Italy to investigate the prevalence of at-risk/problem gambling among immigrant adolescents. The results indicated that immigrant status is significantly associated with greater problem severity and, more specifically, rates of adolescent at-risk/problem gambling were twice as high among first-generation immigrants than non-immigrant students. This result confirms previous findings with adolescent gamblers (Delfabbro et al., 2005; Petry & Tawfik, 2001; Westphal et al., 2000) and extends research in the gambling studies field by demonstrating that foreign-born individuals (first-generation) may be more likely to experience gambling problems than native-born children of foreign-born parents (second-generation). However, an American study (from US residents aged 18+ years) reported an inverse relationship. More specifically, first generation immigrants were shown to have fewer gambling problems than other groups (Wilson, Salas-Wright, Vaughn, & Maynard, 2015). This may be related to the cultural background of immigrants.

**Table 3**  
Odds ratios (95% CI) for reporting at risk/problem gambling in relation to family characteristics and immigrant status.

	At risk/problem gambling (n = 1158)
<b>Main effects</b>	
Males (reference = females)	6.50 (5.55–7.56)***
Other family types (reference = two biological or adoptive parents)	1.31 (1.15–1.49)***
FAS medium-high (reference = low)	0.82 (0.74–0.89)***
1st generation (reference = no)	1.73 (1.38–2.18)***
2st generation (reference = no)	1.17 (0.95–1.44)
Perceived family support	0.86 (0.83–0.89)***
<b>Interactions</b>	
1st generation * FAS	0.85 (0.62–1.18)
2st generation * FAS	0.88 (0.65–1.21)
1st generation * other	1.56 (1.04–2.32)*
2st generation * other	1.15 (0.76–1.75)

\*\*\* p < 0.001.

\* p < 0.05.

Unfortunately, the overall study is aimed at the general population and not at immigrants, resulting in relatively low absolute numbers of immigrant children in the study. Thus, future studies are needed to investigate this possible effect of cultural background of immigrants to problem gambling. Although causation cannot be determined from these findings, the results suggest that immigrant status may pose significantly greater risk to vulnerable youth, with fewer safeguards to prevent them gambling excessively and developing problems (Blinn-Pike et al., 2010). In contrast to findings for the first-immigrant generation, second-generation immigration was not significantly related to problem gambling severity. Thus, results indicated that the odds of being an at-risk/problem gambler were higher among first-generation immigrants than among non-immigrants.

The protection provided by an immigrant's culture and the retaining of cultural norms and values (e.g., increased parental monitoring, social/family bonds, etc.) results in less health risk behaviors (Stevens et al., 2015) as well as the resilience of adolescents and families selected during the immigration process (Guarnaccia & Lopez, 1998). Despite these studies, the odds of at-risk/problem gambling were not higher among the second-generation immigrant group. There is no obvious reason why this may have been the case. It may simply have been that for foreign-born adolescents who are not so resilient, the conflict created by juggling the demands of two cultures and the overall stress associated with adaptation may be difficult, which may heighten the risk of potentially problematic behaviors such as gambling (Harris, 1999). The findings from main effects models in this study indicated that adolescents who lived in a family environment where parents are supportive are associated negatively with problem gambling severity. In line with previous studies, family support showed a negative relationship with gambling severity (Hardoon et al., 2004), because adolescents may have more social resources to turn to when they get into trouble.

Consistent with results from previous studies (Canale et al., 2016a; Hayer and Griffiths, 2016), results from the main effects models indicated that adolescents who did not live with two parents (biological or adoptive) were significantly more likely than adolescents who did not to be at-risk/problem gamblers. The present study extends earlier research by confirming the hypothesis that the associations between family structure and problem gambling severity among adolescents vary with immigrant generation, with stronger associations among first-generation immigrants. More specifically, the association between not living with two parents and problem gambling severity is stronger for first-generation immigrants. This might be due to the fact that changes in family structure following immigration may impact parental ability to perform tasks of support, monitoring and involvement in their children's lives (Hussey et al., 2007), which in turn increase the likelihood of having gambling problems (Canale et al., 2016a; Hayer and Griffiths, 2016). In contrast to findings for family structure, the association between FAS and problem gambling severity did not vary significantly with immigrant generation. However, findings from the present study indicate that financial family status is not more strongly or weakly associated with at-risk/problem gambling among adolescents who are first-generation immigrants than those of other immigrant generations, but is similar across generations.

The equivalent effect of FAS for immigrant and non-immigrant adolescents on at-risk and problem gambling is congruent with a previous study on drug use among immigrant and non-immigrant adolescents (Cristini et al., 2015). It can be hypothesized that the higher rates of at-risk and problem gambling among first-generation immigrant adolescents may be explained by other family factors in interaction with immigrant status, such as parental knowledge and parental caring (Canale et al., 2016b; Molinaro et al., 2014). In addition to there being no significant interaction with immigrant generation, subjective FAS was associated with problem gambling severity among adolescents. Consistent with results from previous studies (Canale et al., 2016a; Hayer and Griffiths, 2016), medium-high affluent adolescents were

significantly less likely than adolescents with lower FAS to be at-risk/problem gamblers.

Although results from the present study should be interpreted cautiously, the study's findings may have some implications for practice. First, the overall findings from the study suggest important differences can be identified within the population of adolescent immigrants. In particular, it was demonstrated that adolescents born outside Italy may face greater risk for developing gambling problems. This suggests that prevention efforts designed to address the needs of adolescent immigrants may benefit from being particularly mindful of those youth who were born abroad. The results may also have implications for policy and practice, suggesting that actions should focus on societal factors that predict family connectedness and resilience, as well as on more traditional aims of improving parenting and family functioning. For example, higher expenditure on benefits in kind for families/children may affect the way in which immigrant families deploy social and economic resources, such as the need to earn income. This, in turn, might increase parents' ability to protect and support their children (Viner et al., 2012), including more parental caring and monitoring.

## 5. Limitations and strengths

This present study is not without its limitations. Firstly, findings were based on self-report data that are subject to well-known biases (social desirability, recall, etc.). Secondly, because of how the HBSC protocol was designed, the participants were only 15-year-old students. It would be interesting to know whether immigrant adolescent gamblers are more likely to start having gambling problems earlier in life than non-immigrant peers. To this end, future studies on this topic should include students from other school grades. Thirdly, although the present study considered the role of socio-demographic characteristics, immigrant status, and gambling severity, future studies may benefit from examining other factors (such as acculturative stress and cultural backgrounds) to better elucidate the differences between first- and second-generation immigrants (Ellenbogen et al., 2007; Hayer and Griffiths, 2016). In addition, another limitation was the small size of the immigrant subsample, which made it impossible to analyze whether gambling problems and socio-demographic characteristics varied across specific immigrant groups (i.e., adolescent's countries of origin). Further analysis examining these relationships is warranted, particularly identifying where most of immigrants came from. Other information related to the immigrant status should be considered in future studies as possible covariates [e.g., ethnicity, religion, marginalization, lack of prospect, and parental background (Carlerby, Viitasara, Knutsson and Gadin, 2011)]. Finally, a significant limitation of the current study was the cross-sectional design. Examining these relationships in a longitudinal study would allow for a clearer causal understanding of the relationship among family characteristics, immigrant status, and gambling severity, and how these relations change over time. Notwithstanding these limitations, the strengths of the study include the use of a large sample representative of the Italian high school population. Moreover, the study clearly demonstrated that: rates of adolescent at-risk/problem gambling were twice as high among first-generation immigrants than non-immigrant students; the odds of being at-risk/problem gamblers were higher among first-generation immigrants than among non-immigrants and not living with two parents appear factors that increase the risk of becoming a problem gambler in first-generation immigrants.

Supplementary data to this article can be found online at <http://dx.doi.org/10.1016/j.addbeh.2016.11.020>.

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## Contributors

The authors have worked in collaboration for this study. Authors NC, AV and GL designed the study. Authors NC and MDG conducted literature searches and provided summaries of previous research studies. Author AV conducted the statistical analysis. Author NC wrote the first draft of the manuscript and all authors contributed to and have approved the final manuscript.

## Conflict of interest

All other authors declare that they have no conflicts of interest.

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