Gambling Disorder: Psychopathology and Family Variables in a Non-Clinical Sample

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Abstract

The main goal of the present study was to compare pathological gamblers from a non-clinical sample with control participants (non-gamblers and social gamblers) in terms of individual and psychosocial variables (psychopathological symptomatology, marital/dyadic adjustment, family functioning and family quality of life), defined by the Integrative Systemic Model of Pathological Gambling (ISMPG). The following instruments were administered to 32 pathological gamblers and 52 non-gamblers/social gamblers: a sociodemographic data questionnaire, Systemic Clinical Outcome and Routine Evaluation–15 (SCORE–15), Quality of Life (QOL), Dyadic Adjustment Scale (DAS), Brief Symptoms Inventory (BSI) and South Oaks Gambling Screen (SOGS). The results showed that pathological gamblers did not perceive their family realities (family functioning, family quality of life, marital adjustment) as more negative compared to non-gamblers/social gamblers. Family Difficulties and Family Communication (difficulties) were lower in the pathological gamblers group, and Dyadic Consensus was higher than the non-gamblers/social gamblers group. The two groups also presented statistical differences regarding psychopathological symptoms, with higher levels of disturbance for pathological gamblers. The results suggest that pathological gamblers do not constitute a homogeneous group, presenting different psychosocial problems with several intensities of negative consequences (e.g., family and marital difficulties) according to the severity of the gambling problem exhibited by this group. Future studies are needed to find more evidence on the current findings and to confirm the heterogeneous nature of pathological gamblers group.

Keywords: Pathological Gambling; Family; Couple; Individual; Non-Clinical Sample

Introduction

Pathological gambling, recently renamed in the DSM-V as a gambling disorder, is an addictive behavior [1,2]. According to the DSM-V, it is diagnosed when at least four of the following criteria are confirmed in a 12-month period: 1) The subject needs to gamble with increasing amounts of money in order to achieve the desired excitement; 2) He/she is restless or irritable when attempting to cut down or stop gambling; 3) He/she has made repeated unsuccessful efforts to control, cut back, or stop gambling; 4) He/she is often preoccupied with gambling; 5) He/she often gambles when feeling distressed; 6) After losing money gambling, he/she often returns another day to get even; 7) He/she lies to conceal the extent of involvement with gambling; 8) He/she has jeopardized or lost a significant relationship, job, or educational or career opportunity because of gambling; 9) He/she relies on others to provide money to relieve desperate financial situations caused by gambling.

Assessment instruments of pathological gambling, which are often used in research on the topic, include the South Oaks Gambling Screen (SOGS) and the Diagnostic Screen for Gambling Disorders (NODS). The SOGS is referred to in literature as the most widely used instrument for assessing pathological gambling and it is the only one adapted for the Portuguese context. The scientific literature suggests that psychosocial and relational variables, and in particular family variables, are closely related to the development, maintenance and negative effects of pathological gambling. In a recent systematic literature review, families with a pathological gambler reported several problems in their family functioning and marital life. Some examples of these reported in the literature include: relational problems, such as arguments, anger, violence, lies, disappointment, negligence of the family by the gambler, poor communication, and confused family rules and roles; negative emotions; gamblers’ dissatisfaction with their family environment, particularly in terms of family support; high degree of expressiveness in the family and open expression of anger; and emotional responsiveness [3–11]. These issues may lead to lower levels of family quality of life in pathological gamblers, since family functioning and family quality of life are positively associated [12]. Indeed, an empirical study measuring the quality of life in pathological gamblers reported lower quality of life compared to control participants [13].

Despite the volume of past research, “it is very hard to be precise about the chronological order of the characteristics of family functioning before or after the problem, given the transverse nature of the studies in question” [14]. This difficulty concerning the chronological order of pathological gambling and family difficulties will only be solved by longitudinal studies. However, due to the difficulty in implementing studies of this nature (longitudinal), systemic approaches that highlight relations, but not direct causes or effects, can still be of value to our understanding of psychosocial gambling.

The Integrative Systemic Model of Pathological Gambling organizes the evidence from the literature on the subject and interprets it as a coherent whole [14]. Initially, the model described four levels of understanding. The first of these are the social context, which refers to how the social acceptance and availability/accessibility of gambling can contribute to pathological gambling. Recently, proposed that economic context be added as an additional component of this level and that this level as a whole should serve as a back drop to the remaining levels (family, marital and individual), which form the core of the model [15]. The second level highlights the role of the family in two ways: transgenerationally and relationally. The transgenerational influence on gambling can be positive or negative, and via direct routes (transmission of behaviors, thoughts, and beliefs directly related to gambling, such as gambling habits in the family), or indirect routes (e.g., significance of money in the families of origin). The relational influence concerns the functioning of the gambler’s family (e.g., difficulties with communication and the management of emotions and affections). The third level of understanding is the couple. The couple is differentiated from the family level because marital subsystems have particular dynamics that should be specifically analyzed. For example, according to the notion of developmental value of the symptom, gambling would be a sign of something
wrong in one or more vital functions of the marital subsystem and the exercise of control and power in the relationship can be indicated as one of these functions. In other words, gamblers may feel worthless and misunderstood within a relationship and so may find gambling to be an activity that engenders an illusory sensation of power [16]. However, since the spouse or partner also sees this behavior as relevant for defining the power relationship within the partnership/marriage, this activity tends to be repeated and extended and the two parties focus on it. Gambling behavior then becomes a habit and pathological by replacing/triangulating one of the functions of the system (the exercise of control/power in the relationship). The fourth and final level of analysis (the micro level) is the individual, where psychosocial fragility is considered.

Pathological gambling is related to a range of problems from physical and psychological ill-being (e.g., stomach pain, cardiovascular disorders or anxiety, depression) to psychosocial issues including higher rates of divorce, suicide and unlawful activities conducted in order to continue gambling, increased spending by national health services on gamblers and their families, increased number of indebted households, and so forth [17–19]. These issues affect both the gamblers and their relatives [20,21]. Despite the diversity and severity of the consequences associated with it, pathological gambling remains a phenomenon that is underestimated and under-researched in Portugal [22]. This fact is surprising given the prevalence of pathological gambling in Portugal is similar to other European countries, and considering the current socio-economic crisis, which, bearing international patterns in mind, could result in an increase in this phenomenon [2,22,23]. Furthermore, the few Portuguese studies that do exist are essentially epidemiological, reiterating some international trends to favor studies focused on the individual gambler and lacking a systemic and family interpretation of the problem [18,23–25].

In general, the international literature is primarily focused on studies conducted with clinical samples of pathological gamblers [3,26–30]. This may lead to a reductionist comprehension of gambling since most studies are focused on a small population that is clearly identified as being severely disturbed. Considering this, it is important to develop research with gamblers from an on-clinical sample (i.e., clinically not treatment seeking) to 1) Avoid any bias associated with therapeutic intervention; and 2) Not restrict findings to the cases of extreme severity supposedly present in clinical populations. The main goal of the present study was therefore to compare pathological gamblers from a non-clinical sample with control participants (non-gamblers/social gamblers) in terms of individual and psychosocial variables (psychopathological symptomatology, marital/dyadic adjustment, family functioning and family quality of life) relevant to the ISMGP. The added value of this investigation is consequently the examination of individual, family and marital variables on an integrated basis and in a non-clinical sample. Despite the non-clinical sample, considering the past research cited above, we anticipated that pathological gamblers would show more difficulties in all variables than controls.

Materials and Methods

Participants

The sample consisted of 84 participants: 52 non-gamblers and social gamblers (NSGs), and 32 pathological gamblers (PGs). Note that we include two types of subjects in the control group (non-gamblers and social gamblers), since neither exhibit problems associated with gambling activity [31]. The mean score obtained in SOGS by the PGs was 8.44 (SD = 3.70) and most scored between five and eight (n = 19, 59.39%). Table 1 presents the demographic characteristics of both groups.

The PG group comprised 20 male participants (62.50%) and 12 female participants (37.50%). The average age was 32.30 years (SD = 11.20) (Table 1). Most subjects were not married (n = 25, 78.12%), had completed upper secondary education or a bachelor’s degree (n = 21, 65.62%), were students (n = 13, 40.62%), belonged to a medium socioeconomic status (n = 7, 21.88%), and lived in mainly urban areas (n = 26, 81.25%). In the NSG group, the mean SOGS score was 0.52 (SD = 0.83) and the majority (n = 28, 53.85%) scored ‘0’. This group (NSGs) was composed of 24 females (46.15%) and 28 males (53.85%), with an average age of 29.33 years (SD = 9.07). Most were not married (n = 33, 63.46%), had completed upper secondary education (n = 30, 57.69%), belonged to a medium socioeconomic status (n = 29, 55.77%), were students (n = 15, 28.85%), and lived in mainly urban areas (n = 44, 84.62%). The two groups were not statistically different in terms of sex (p = 0.44), marital status (p = 0.16), residence (p = 0.69) (chi square test) Fisher’s test) and age (Mann-Whitney U test; p = 0.40). The NSG group had a statistically higher level of education (Fisher’s test; residual 3.0; p = 0.013) and socioeconomic status (Fisher’s test; residual 3.0; p = 0.003).

Sample Recruitment Procedure

Before presenting the sample recruitment procedure, it is important to clarify that control participants were selected from a larger community sample (N = 234; collected under a bigger project that includes the present study) in order to match the maximum possible characteristics with experimental group.

We used a non-probabilistic convenience sampling technique where subjects (from both groups) were selected because of their convenient accessibility and proximity to the researcher or to the other participants. Two recruitment methods were used: online and in-person. In both cases, cooperation was contingent on the provision of prior information (study objectives, respect for confidentiality and anonymity, voluntary participation, free specialist clinical support and service’s contacts of the host institution of the authors). The participants did not sign any informed consent form, given the voluntary, anonymous and confidential nature of the information [32]. In the PG group, most were recruited in person (n = 22, 68.75%) and twelve (37.50%) were recruited online. In the case of in-person recruitment, the invitation to participate in the study was made in places known for accommodating gambling (e.g., cafes, sports facilities). The people in charge of these establishments were asked to distribute the experimental protocol to gamblers in private. The participants then completed the question nearest home or any other place of their choosing. Participants returned the completed protocols by mail to the researchers. This procedure was explained in the protocol presentation page and the return response rate was about 95%. In the case of online form completion, invitations were made via email, social networks and gambling platforms. There were no statistically significant differences between the two collection methods for the five variables under study-family functioning, quality of life, marital adjustment, psychopathological symptoms and severity of gambling (0.07 < p < 0.90). In NSG group only the online collection procedure was used, following the same procedure. The study was approved by an external agency, Foundation for Science and Technology (FCT) which sponsored the project as well.

We considered the following criteria for inclusion/exclusion in the PG group: 1) ability to read and write; 2) age over 18 years; 3) having a diagnosis of pathological gambling (this criterion was ensured afterwards by screening enabled by SOGS score of five or more), and 4) being free from any kind of specialized support related to pathological gambling (this criterion was ensured afterwards by a question inserted in socio-demographic
information questionnaire). The first two criteria for inclusion/exclusion in the NSG group are the same as for the PG group, the third means a score of less than three in SOGS, and the fourth is not applicable.

**Measures**

**Socio-Demographic Questionnaire:** A socio-demographic questionnaire was administered for characterization purposes (gender, marital status, nationality, residence, age, education and occupation). It also contained a question that enabled the operationalization of the fourth criterion of inclusion/exclusion in the PG sample (not having a specialized clinical support for gambling problems).

**Systemic Clinical Outcome and Routine Evaluation:** Self-report instrument that assesses family functioning. It consists of 15 items that represent three dimensions; Family Strengths (strengths and adaptability), Family Communication (disrupted communication) and Family Difficulties (overwhelmed by difficulties) [12,15]. The SCORE-15 also includes five additional items that relate to the family routine, the nature and impact of family problems and possible therapeutic needs. The subject evaluates how each item describes their family using a 5-point Likert scale, where 1 "describes us very well" and 5 "describes us very badly", with higher scores corresponding to more problematic family functioning. Additionally, SCORE-15 has five separate indicators: two open questions ("What words would best describe your family?" and "What is the main problem/challenge in your family?")) and three 10-point Likert scale questions ("How severe is it?", "How are you managing as a family?" and "Do you think the family therapy could be helpful?"). The family definition is clarified by the following instruction: "When people say 'your family' they often mean the people who live in your house". In the current study, SCORE-15 had a reasonable internal consistency (Cronbach's alpha): Family Strengths (α = 0.77), Family Communication (α = 0.67) and Family Difficulties (α = 0.78).

**Quality of Life:** This instrument was used to assess the perception of the quality of family life. It is a self-report questionnaire, with 20 items representing four dimensions: Family, Friends and Health (satisfaction with family, friends and health); Time (satisfaction with the time available for the family, for the housework and for himself/herself); Media and Community (satisfaction with the media, such as quality of newspapers, and the community, e.g. security); and Financial Well being (satisfaction with their income and their ability to cover family expenses and savings level) [34,35]. Items are answered on a 5-point Likert scale, where 1 corresponds to "dissatisfied" and five to "extremely satisfied", with a higher scores corresponding to a better quality of life. In the current study, QOL had a reasonable/good internal consistency (Cronbach's alpha): Family, Friends and Health (α = 0.70), Time (α = 0.76), Media and Community (α = 0.72) and Financial Wellbeing (α = 0.87).

**Dyadic Adjustment Scale:** The DAS aims to assess dyadic adjustment through 32 items grouped into four dimensions: Dyadic Consensus (degree to which respondent agrees with partner), Dyadic Satisfaction (degree to which respondent feels satisfied with partner), Affectional Expression (degree to which respondent agrees with partner regarding emotional affection) and Dyadic Cohesion (degree to which respondent and partner participate in...
activities together [36,37]. The response options are Likert scales with either five or six options. Two items (item 29 and item 38) have two options and can therefore be considered a dichotomous response scale. High scores on this questionnaire indicate a better dyadic adjustment. In the current study, DAS had a good internal consistency (Cronbach’s alpha): Dyadic Consensus (α = 0.92), Dyadic Satisfaction (α = 0.92), Affectual Expression (α = 0.83) and Dyadic Cohesion (α = 0.82).

**Brief Symptoms Inventory:** This instrument is a self-report inventory consisting of 53 items. Response options for these items are on a Likert scale ranging from “never” (0) to “very often” (4) [38,39]. The BSI offers a measure of general distress across nine dimensions: Somatization, Obsessions-Compulsions, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation and Psychoticism. It also provides scores on three global dimensions: Somatization (α = 0.87), Obsessions-Compulsions (α = 0.84), Interpersonal Sensitivity (α = 0.85), Depression (α = 0.84), Anxiety (α = 0.85), Hostility (α = 0.82), Phobic Anxiety (α = 0.82), Paranoid Ideation (α = 0.81), Psychoticism (α = 0.82) [40].

**South Oaks Gambling Screen (SOGS):** Composed of 20 items, and based on the DSM-III, the SOGS facilitates the evaluation of the impact of gambling on various fields of the gambler’s life: family, social, professional, financial and emotional aspects [23,40]. The gambler is considered pathological when he/she scores five or more points out of a possible 20, and the more severe, the higher is the final score. The SOGS also provides additional data (via informational items that are not included in the calculation of the overall score) on the type and frequency of gambling, the amounts involved in the bet and the existence of family and friends with problems related to gambling. It allowed us to operationalize the third criterion of inclusion in the sample (diagnosis of pathological gambling). In this study, SOGS showed a good internal consistency (Cronbach’s alpha= 0.89).

### Statistical Analysis

The Statistical Package for Social Sciences (SPSS) software, version 21, was used to perform the analyses. Subjects presenting missing values and outliers (n = 12) were removed from analyses. Two of these subjects were from the PG group and 10 belonged to NSG group. Table 1 refers to the data after removing these participants. Some descriptive statistics were calculated (sample characterization). Given the small sample size, whenever possible, the groups were compared using non-parametric tests (chi-square test ($\chi^2$), Fisher’s exact test and corresponding residual analysis and Mann-Whitney Test).

Residual analysis clarifies the direction of the differences between groups. The Standardized Residual follows an approximately normal distribution (M = 0; SD = 1). Thus, we can compare with the quantile probability of a standardized normal distribution and analyze which residuals are significant at the usual significance level (5% i.e. 1.96). We conducted a non-parametric two-way between-groups analysis of variance (non-parametric two-way ANOVA) to explore the influence of socio-demographic variables and group on dependent variables. For this we adopted the procedure suggested by on pages 354 to 360 [41].

Effect sizes were calculated relative to all the intergroup comparisons: r -0.1 = small effect; 0.3 = medium effect; 0.5 = large effect; Eta squared -0.01 = small effect, 0.06 = moderate effect, 0.14 = large effect; Phi -0.1 = small effect, 0.3 = moderate effect, 0.5 = large effect 42 [42,43]. The significance level was set to 5% in all the tests.

### Results

#### Family and Marital Adjustment Variables

In terms of family functioning (SCORE-15; Table 2), the differences between the two groups were statistically significant for the Family Difficulties and Family Communication areas.

An analysis of the open response questions showed that: 1) PGs and NSGs chose positive words (e.g. union, love, harmony) to describe their families [n = 27, 84.38% ; n = 46, 88.46%, respectively] \(X^2 (2, N = 84) = 4.69, p = 0.13\); 2) financial problems were mentioned as the main family problem in both groups [PG (n = 21, 65.63%); NSG (n = 7, 13.46%)], but significantly more often in PGs [\(X^2 (1, N = 84) = 14.24, p < 0.001\); the magnitude of the difference is large (Phi = 0.50)]; 3) both groups were close to the mid-range scale considering the severity of the main family problem (ten points scale - 0/no problem to 10/very severe) [PG (Mean rank =

### Table 2: Family and Marital Adjustment Variables

<table>
<thead>
<tr>
<th>Family Functioning (SCORE-15)</th>
<th>Group PGs</th>
<th>Group NSG</th>
<th>Comparison of groups (Mann-Whitney Test)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Global</strong></td>
<td>36.75</td>
<td>46.04</td>
<td>U(82) = -3.38, p = 0.001 (r = -0.37)</td>
</tr>
<tr>
<td>F Communication</td>
<td>31.11</td>
<td>49.51</td>
<td>U(82) = 0.35</td>
</tr>
<tr>
<td>F Strengths</td>
<td>45.67</td>
<td>40.55</td>
<td>U(82) = 0.03 (r = -0.23)</td>
</tr>
<tr>
<td>F Difficulties</td>
<td>35.23</td>
<td>49.97</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quality of Life (QOL)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Global</strong></td>
<td>30.07</td>
<td>21.07</td>
<td>U(82) = 0.09</td>
</tr>
<tr>
<td>Financial Well-being</td>
<td>42.89</td>
<td>39.21</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>44.64</td>
<td>38.97</td>
<td></td>
</tr>
<tr>
<td>Family, Health and Friends</td>
<td>20.56</td>
<td>23.53</td>
<td></td>
</tr>
<tr>
<td>Media and Community</td>
<td>45.22</td>
<td>37.29</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dyadic Adjustment Scale (DAS)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Global</strong></td>
<td>115.50</td>
<td>17.70</td>
<td>U(22) = -2.17, p=0.03(r=0.24)</td>
</tr>
<tr>
<td>Dyadic Consensus</td>
<td>58.67</td>
<td>4.46</td>
<td></td>
</tr>
<tr>
<td>Dyadic Satisfaction</td>
<td>39.14</td>
<td>13.80</td>
<td></td>
</tr>
<tr>
<td>Affectual Expression</td>
<td>8.86</td>
<td>2.19</td>
<td></td>
</tr>
<tr>
<td>Dyadic Cohesion</td>
<td>15.29</td>
<td>1.89</td>
<td></td>
</tr>
</tbody>
</table>

A large percentage of PGs (n = 21, 65.63%) reported (SOGS) having a significant other with gambling-related problems; father (n = 1, 3.13%), spouse (n = 2, 6.25%), children (n = 17, 53.13%). About half of many of the NSGs reported the same (n = 16, 30.77%), with a particularly large difference in terms of friends; father (n = 2, 3.85%), spouse (n = 2, 3.85%), children (n = 0, 0%), grandparents (n = 0, 0%) and friends (n = 12, 23.08%). The number of PGs and the NSGs who reported having a significant other with gambling problems were compared using the chi-square test for independence and this difference was found to be significant [X² (2, N = 37) = 7.39, p = 0.00], its magnitude being moderate [Phi = 0.40]. Residuals show that these differences were due to the fact that the PGs had more friends who have gambling problems (4.3) and less instances of no friends with gambling problems (-2.9), while the NSGs had less friends who have gambling problems (-4.3) and more instances of no friends with gambling problems (2.9), than would be expected if the variables were independent.

Concerning the quality of family life (QOL; Table 2), both the total score and for each dimension (financial well-being; time; family, health and friends; media and community), differences between groups were not statistically significant.

PGs and NSGs did not show statistically significant differences in terms of marital adjustment (DAS) (Table 2), neither for the global score nor for each dimension, with the exception of dyadic consensus, which was higher in PGs.

### Brief Symptoms Inventory

The Positive Symptom Index (cut-off: 1.7) showed that the PGs were not an emotionally disturbed group, although the differences between the two groups (PG and NSG) were statistically significant, higher in PGs for all dimensions with the exception of Interpersonal Sensitivity and Somatisation (Table 3) [39].

### Influence of Socio-Demographic Variables

A non-parametric two-way ANOVA was conducted to explore the influence of socio-demographic variables (sex, socioeconomic status, marital status, education; and area of residence) and group (PG and NSG) on dependent variables (instruments global scores).

The interaction effects (sex × group, socioeconomic status × group, marital status × group, education × group and area of residence × group) and the main effects did not reach statistical significance for any independent variable (p < 0.05) [41].

### Discussion

The main goal of the present study is to compare pathological gamblers (non-clinical sample) with control participants (non-gamblers/social gamblers) as regard relevant individual and psychosocial variables (psychopathological symptomatology, marital/dyadic adjustment, family functioning and family quality of life), according to the ISMPG. Note that in order be parsimonious in the protocol extension, and given the complementary role of the first level of the model [15], in this study we only evaluated the three core levels of ISMPG (family, couple and individual). We shall discuss these evaluations hereafter from the macro to micro level.

The groups did not show the expected differences, particularly in terms of the family and marital variables. We anticipated that PGs would exhibit less adaptive levels of family and marital functioning compared to those in the NSG group [3,4,14,25,26,28–30,44,45]. However, although subjects in our PG group can be considered pathological gamblers compared to the control subjects (NSGs), they didn’t express the hypothetical family and marital difficulties shown in past research and as predicted by ISMPG. Conversely, they showed fewer Family Difficulties and Communication Difficulties (SCORE-15) and higher levels of Dyadic Consensus (DAS) than the NSG group.

Considering the second level of ISMPG, that is, the family level, it is important to consider transgenerational and the relational aspects [14]. Associated with family behaviours and belief transmission (e.g. gambling habits in the family), the transgenerational aspect shows no negative signs in our study, as we found that most of the significant others with gambling problems were friends rather than family (53.13% vs. 12.51% relatives). The higher percentage of friends with gambling problems (53%) could be attributed to the age of the participants (M = 32.30 years, SD = 11.20). However, a study conducted in Spain with a more representative sample in terms of age, found similar results: 20% of social gamblers felt that their friends play too much, but this figure rose to 39% for problem gamblers, and to 85% for pathological gamblers [46]. In fact, gambling involvement among one’s peers and friends constitutes a similar risk factor to parental or familial modelling of gambling and/or problem gambling for gambling involvement, heavy

<table>
<thead>
<tr>
<th>Psychopathological symptoms (BSI)</th>
<th>Group PGs</th>
<th>Group NGs</th>
<th>Comparison of groups (T Student Test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Symptom Index (GSI)</td>
<td>48.02</td>
<td>34.18</td>
<td>t(82) = -2.63, p = 0.009 ( r = 0.29 )</td>
</tr>
<tr>
<td>Positive Symptom Total (PST)</td>
<td>53.31</td>
<td>35.85</td>
<td>t(82) = -3.19, p = 0.001 ( r = -0.35 )</td>
</tr>
<tr>
<td>Positive Symptom Index (PSI)</td>
<td>46.17</td>
<td>35.33</td>
<td>t(82) = -2.06, p = 0.040 ( r = -0.22 )</td>
</tr>
<tr>
<td>Obsession-compulsion</td>
<td>53.19</td>
<td>35.92</td>
<td>t(82) = -3.16, p = 0.002 ( r = -0.34 )</td>
</tr>
<tr>
<td>Depression</td>
<td>49.63</td>
<td>38.12</td>
<td>t(82) = -2.11, p = 0.035 ( r = -0.23 )</td>
</tr>
<tr>
<td>Paranoid Ideation</td>
<td>51.41</td>
<td>36.10</td>
<td>t(82) = -2.83, p = 0.005 ( r = -0.31 )</td>
</tr>
<tr>
<td>Anxiety</td>
<td>50.73</td>
<td>37.43</td>
<td>t(82) = -2.45, p = 0.014 ( r = -0.27 )</td>
</tr>
<tr>
<td>Hostility</td>
<td>50.61</td>
<td>37.51</td>
<td>t(82) = -2.41, p = 0.016 ( r = -0.26 )</td>
</tr>
<tr>
<td>Phobic Anxiety</td>
<td>51.70</td>
<td>36.84</td>
<td>t(82) = -2.83, p = 0.003 ( r = -0.31 )</td>
</tr>
<tr>
<td>Psychoticism</td>
<td>53.67</td>
<td>35.63</td>
<td>t(82) = -3.32, p = 0.001 ( r = -0.36 )</td>
</tr>
<tr>
<td>Somatization</td>
<td>46.60</td>
<td>37.53</td>
<td>0.09</td>
</tr>
<tr>
<td>Interpersonal Sensitivity</td>
<td>47.06</td>
<td>38.82</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Table 3: Psychopathological Symptoms.
This result suggests that future studies should assess the influence of peers and consider the possibility of extending the social context (the complementary level of ISMPG) to the influence of the peer group.

In terms of the relational aspect of the family level of analysis, that is, focusing on the functioning of the gambler’s family, the results from the SCORE-15 (no significant mean differences between the two groups for the SCORE-15 global score, although the PG group showed fewer Family Difficulties and Family Communication difficulties) were consistent with the data retrieved from the open questions about family climate. Indeed, PGs didn’t differ from controls on this topic, describing their families with positive words (0.44%), and reporting that they are well organized as a family to face their problem (2.10 average on a 0-10 points scale, where 0 corresponds to “very good”). Contrary to what was expected [3–5], it seems that PGs saw their families as supportive and reassuring. Also contrary to what is indicated by the literature the PGs did not see family quality of life (QOL) as less satisfactory [13]. The findings related to the third level of ISMPG, the marital level, go in the same direction, the only significant difference between gamblers and controls being higher levels of Dyadic Consensus (DAS) in the PG group.

These results may lead directly to the hypothesis of social desirability. Nonetheless, the usual guilt felt by gamblers [48], which was also found in our PG group (81%), could lead to an overestimation of family/marital functioning, in an idealized rationale – “my family/marriage is great and everything bad happening in it is due to me (and to gambling)”. Thus these results may express an idealization/guilt relief effect (as if the gambler’s guilt does not allow him/her to recognize any “flaws” in his/her family whose suffering is something he/she has caused). In fact, some studies have indicated that gamblers’ relatives, specifically their spouses, have a worse perception of family functioning and marital adjustment than PGs [14,49].

Even so, other hypotheses linked to the sample composition may emerge from this data. It should be noted that one of the novelties of this study was that the PGs were drawn from a non-clinical sample, free from any clinical or psychosocial interventions (e.g. anonymous gamblers). Most studies in the literature have been conducted with clinical samples, although there are some exceptions [50–54]. With this in mind, a study on the spontaneous remittance of problem gambling found that formally treated recovered gamblers (a clinical sample) appeared to have a more severe gambling problem than untreated recovered gamblers (a non-clinical sample), as indicated by a longer problem gambling career and more gambling-related negative consequences [54]. This indicates two possible levels of analysis for our findings: the degree of the severity of the problem and the related psychosocial difficulties; and the long gambling career of clinical gamblers compared to non-clinical gamblers. As suggested by the literature, financial problems tend to be the first problems experienced in the development of pathological gambling [31]. In the present study the differences between groups in socioeconomic status could have influenced the results, although there were no statistically significant interaction effects between socio-demographics variables and pathological gambler/non-social gambler’s individual or family characteristics. This suggests that the two groups’ results were not influenced by the demographic variables. In other words, in our study being male or female, married or not married (50% of the participants), or belonging to a particular SES didn’t interact significantly with the PGs and NSGs psychosocial variables’ results.

Referring back to our second line of thinking, the existence of a long gambling career is associated with the most severe cases of PG [54]. This may lead to the hypothesis that non-clinical PGs may constitute a younger group than clinical PGs. The average age of our PG’s non-clinical sample was 32.30 years (SD = 11.20), which is fairly young. It can thus be presumed that non-clinical pathological gamblers as a group are characterized by younger individuals who suffer from the important adverse individual psychological effects of gambling, but who do not have non-impressive negative family/marital consequences. It is possible that because of the younger age of these PGs, the length of their gambling problem may not have been long enough to cause problems in the family and marital areas. In support of this, a recent study showed that age influences the psychopathological and clinical aspects associated with PG, that is, the older the patient the more co-morbid health problems were visible [58,59]. Thus age should be considered as an important covariate in future studies on different types of gambling severity.

**Conclusion**

In the present study PGs didn’t express family and marital difficulties as proposed by the ISMPG. Indeed, they showed fewer Family Difficulties and Communication Difficulties (SCORE-15) than NSGs. Additionally, PGs scored significantly higher on the extreme level of pathology severity (the cut-off score in the SOGS that is, focusing only on the relations between variables (in detriment of direct causes or effects). The sample size is also an important limitation of this study, particularly in relation to the marital results which should be considered with caution. Furthermore, the results apply to this particular sample and cannot be generalized to the population of pathological gamblers, given the sample recruitment method (non-probabilistic convenience), its small size and its specificity (non-clinical gamblers). This last aspect is simultaneously a strength of this study, since it is unusual in studies on the subject. Another added value of this study is that it included individual, family and marital variables in an integrated basis and in a non-clinical sample.

In order to obtain further evidence on the features of PGs, future studies comparing gamblers with different degrees of gambling severity and considering the same individual, family and marital dependent variables are needed. Age is also an important covariate to consider in future research on different types of gambling involvement and potentially problem gambling [47]. This result suggests that future studies should assess the influence of peers and consider the possibility of extending the social context (the complementary level of ISMPG) to the influence of the peer group. This said, it is worth noting that financial problems were the main family problem mentioned in our study (differing statistically from the NSG group). As suggested by the literature, financial problems tend to be the first problems experienced in the development of pathological gambling [31]. In the present study the differences between groups in socioeconomic status could have influenced the results, although there were no statistically significant interaction effects between socio-demographics variables and pathological gambler/non-social gambler’s individual or family characteristics. This suggests that the two groups’ results were not influenced by the demographic variables. In other words, in our study being male or female, married or not married (50% of the participants), or belonging to a particular SES didn’t interact significantly with the PGs and NSGs psychosocial variables’ results.

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In order to obtain further evidence on the features of PGs, future studies comparing gamblers with different degrees of gambling severity and considering the same individual, family and marital dependent variables are needed. Age is also an important covariate to consider in future research on different types of
gambling severity. The assessment of the influence of the peer group, in order to consider the possibility of extending the social context (the complementary level of the ISMPG) to this particular variable, is also an important future research direction on the subject.

Declaration of Interests

The authors declare that they have no conflict of interests.

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