Psychopathological symptoms in soccer referees: The role of psychological inflexibility and perfectionism (#111729)

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Psychopathological symptoms in soccer referees: The role of psychological inflexibility and perfectionism

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Background: Refereeing is associated with a high prevalence of mental health issues. Mental health problems are quite common in sport and referees are no exception. In the case of referees, mental health problems are associated with a number of factors and lower league referees are more likely to experience mental health problems compared to their higher league counterparts. Aim: The aim is to analyze the relationship between psychological inflexibility, perfectionism, and psychopathological symptomatology in soccer referees. Method: A cross-sectional, anonymous, online study was conducted. Psychopathological symptoms were assessed using the Symptom Assessment-45 Questionnaire; the Acceptance and Action Questionnaire was used to assess psychological inflexibility; Perfectionism was assessed using the Multidimensional Perfectionism Scale. Participants are 156 active main referee (96.8% male), of whom 63.5% are at amateur level and 36.5% at semi-professional/professional level. Result: There were no significant differences between amateur and semi-professional/professional referees in psychological inflexibility and psychopathological symptoms, except for paranoid ideation, where amateurs scored higher. Significant differences were found in maladaptive perfectionism total scores, particularly in external influences, with amateurs scoring higher. In adaptive perfectionism, significant differences were noted in total scores and achievement expectations, with higher scores for amateurs. Psychological inflexibility showed a strong predictive capacity for psychopathological symptoms (β = .716). When maladaptive perfectionism was included in the model, it significantly predicted 17.6% of the variance. Adaptive perfectionism did not significantly predict symptomatology. Conclusion: The results suggest that psychological inflexibility and maladaptive perfectionism are good predictors of psychopathological symptoms and mental health in referees. The status of amateur or semi-professional referees does not differentiate them from professional referees in terms of mental health, but it does in terms of perfectionism. With a view to the future, it is important to intervene on these constructs, which are modifiable and facilitate

the well-being of referees.

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Abstract

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with higher scores for amateurs. Psychological inflexibility showed a strong predictive capacity for psychopathological symptoms (β = .716). When maladaptive perfectionism was included in the model, it significantly predicted 17.6% of the variance. Adaptive perfectionism did not significantly predict symptomatology. **Conclusion:** The results suggest that psychological inflexibility and maladaptive perfectionism are good predictors of psychopathological symptoms and mental health in referees. The status of amateur or semi-professional referees does not differentiate them from professional referees in terms of mental health, but it does in terms of perfectionism. With a view to the future, it is important to intervene on these constructs, which are modifiable and facilitate the well-being of referees.

Subjects Psychology, Mental Health, Sport Psychology, Global Health
Keywords Mental Health, Refereeing, Psychopathology, Perfectionist, Psychological Flexibility

Introduction

Mental health problems are highly prevalent in sports (Gulliver, et al., 2015; Kilic, et al., 2021; Poucher, et al., 2021), and referees are no exception (Arbinaga, et al., 2019; Lima, et al., 2022). In referees, mental health issues are associated with various factors such as marital status (being single), younger age, limited refereeing experience, history of injuries, and performance concerns. Moreover, female referees are at a higher risk of mental health problems (Carson, et al., 2020; Lima, et al., 2022; Vela & Arbinaga, 2018; Webb, et al., 2021), while lower-league referees are more likely to experience mental health problems compared to their higher-league counterparts (Lima, et al., 2023). Amateur referees face a greater number of negative behaviors (Webb, et al., 2020) and have greater concerns about being assaulted, partly due to their closer proximity to the public and their younger age (Cuskelly & Hoye, 2013). Furthermore, they often have fewer resources to effectively perform their refereeing duties.

In a study by Kilic, et al. (2018) conducted among soccer referees across eight European countries, 5.9% reported symptoms of distress, 11.8% reported anxiety/depression, 9.1% reported sleep disturbances, and 16.5% reported adverse alcohol use. Additionally, Gouttebarge, et al. (2017) examined the prevalence of common mental disorders among 391 professional soccer referees from various European countries (mean age of 33 years; mean career duration of 7 years), of which 292 took part in a one-season follow-up period. Baseline 4-week prevalence rates were 6% for distress, 12% for anxiety/depression, 9% for sleep disturbance, 19% for eating disorders, and 17% for adverse alcohol use. The one-season incidence of common mental disorder symptoms was 10% for distress, 16% for anxiety/depression, 14% for sleep disturbance, 29% for eating disorders, and 8% for adverse alcohol use. A higher number of severe injuries (Arbinaga, 2023) and a lower degree of satisfaction with social support have shown to be significantly related to the occurrence of common mental disorder symptoms, with odds ratios (OR) of 2.63 and 1.10, respectively (Kilic, et al., 2018).

Perfectionism is a widely studied construct within sports (Hill, et al., 2019). In athletes, perfectionism is related to performance and plays a prominent role in both functional and adaptive aspects (Rice, et al., 2013; Robazza, et al., 2023; Taylor, et al., 2016). Adaptive perfectionism is associated with factors such as achievement expectations and organization. Conversely, maladaptive aspects are characterized by high external expectations (imposed by family and coaches), fear of making mistakes, and reflections on the quality of performance (Appleton, et al. 2011; Lizmore, et al., 2017; Madigan, et al., 2017).

It should be noted that perfectionism is associated with several psychopathologies (Stoeber & Otto, 2006). Consequently, the relationship between perfectionism and psychopathological symptoms has been extensively studied across various sports (Gulliver, et al., 2015; Hill, et al., 2015; Nixdorf, et al., 2016; Schaal, et al., 2011). For example, international athletes recognize that while perfectionism can be a source of motivation, it can also be linked to personal and interpersonal difficulties such as worry or insomnia (Hill, et al., 2015). So on, in the sports context, perfectionism has been associated with anxiety (Koivula, et al., 2002; Schaal, et al., 2011; Stoeber, et al., 2007), depression (Gorczynski, et al., 2017; Gulliver, et al., 2015; Nixdorf, et al., 2016; Schaal, et al., 2011; Wolanin, et al., 2016), and stress (Crocker, et al., 2014; Flett, & Hewitt, 2005; Hall, 2006; Schaal, et al., 2011; Tashman, et al., 2010). These relationships were primarily found with maladaptive perfectionism, although it was also noted that adaptive perfectionism could be also associated with distress (Hill, et al., 2008).

Additionally, perfectionism has traditionally been conceptualized as a vulnerability factor (Sirois & Molnar, 2014), characterized by cognitive rigidity and behavioral inflexibility (Delor, et al., 2019). Inflexible individuals lack strategies tailored to specific situations and tend to use the same strategies regardless of context (Crosby, et al., 2013). Perfectionism is also related to adverse outcomes, including stress, poor mental health, pain frequency/intensity, and fatigue (Molnar, et al., 2012). More specifically, perfectionism is associated with reduced functioning and optimal health (Molnar, et al., 2012), mediated by processes such as behavioral disengagement, denial, self-blame (Quartana, et al., 2009), and experiential avoidance (Bisgaier, 2019).

Conceptualizing perfectionism as a contextual behavioral construct has allowed researchers to explore the relationship between perfectionism and psychological flexibility. The latter is defined as the capacity to act according to values and long-term goals, even when experiencing discomfort. This definition is of particular clinical relevance since (operant) behaviors are considered to be under contextual control, suggesting they can be directly modified (Gentili, et al., 2019).

The present study focuses on soccer referees, whose tasks are characterized by a high level of interaction and the need to attend to numerous stimuli (MacMahon & Plessner, 2013). The aim is

to analyze the relationship between psychological inflexibility, perfectionism, and psychopathological symptomatology in soccer referees. We expect to find greater psychopathological symptomatology in amateur referees compared to semi-professional and professional referees. Additionally, higher levels of psychological inflexibility are predicted to be positively associated with elevated scores on psychopathological symptoms. Similarly, psychological inflexibility is expected to correlate positively with maladaptive perfectionism and negatively with adaptive perfectionism. Finally, we expect to see a negative relationship between adaptive perfectionism and psychopathological symptomatology and a positive relationship between maladaptive perfectionism and psychopathological symptomatology.

Materials & Methods

Participants

The eligibility criteria for this study were: 1) to be a soccer main referee, 2) over 18 years of age, 3) to have been a member of The Referees Committee of the Royal Spanish Soccer Federation for at least three years, 4) to be an active referee, and 5) to provide written informed consent.

The sample comprised 156 main referee (151 men, accounting for 96.8% of the sample) who were active members of The Referees Committee of the Royal Spanish Soccer Federation. Their mean age was 28.54 years (SD = 7.63). Regarding educational attainment, 65.4% reported having university degrees, 26.9% had completed secondary education, and 7.7% had basic education. On average, participants had been federation members for 9.15 years (SD = 5.48). Regarding referee categories, 63.5% officiated in amateur leagues, while 36.5% were involved in semi-professional or professional leagues.

Instruments

Information about sociodemographic variables (year of birth, sex, level of education), and arbitration variables (years of federation membership, arbitration category) was collected.

Psychopathological symptoms were assessed using the 45-item self-report instrument Symptom Assessment-45 Questionnaire -SA45- (Davison, et al., 1997), in the Spanish adaptation by Sandín, et al. (2008), which is a derived from the Symptom Checklist -SCL90- (Derogatis & Cleary, 1977). The questionnaire assesses the same dimensions as the SCL-90-R: hostility, somatization, depression, obsession-compulsion, anxiety, interpersonal sensitivity, phobic anxiety, paranoid ideation and psychoticism. Participants are asked to answer each item (e.g., The idea that another person can control their thoughts) by indicating the frequency with which they have experienced each of the 45 symptoms during the past week, between 0 (‘not at all’) and 4 (‘very or extremely’). Evidence in support of its reliability and validity has been reported for both the English version (Davison et al., 1997) and the Spanish version (Sandín et al., 2008). The reliability demonstrated in this study is a Cronbach's $\alpha = .965$.

The Acceptance and Action Questionnaire -AAQII- (Bond, et al., 2011), adapted to Spanish by Ruiz, et al. (2013), was used to assess psychological inflexibility/flexibility. This is a 7-item questionnaire concerned with how the individual relates to their internal events (e.g., thoughts, feelings, emotions, and memories) and to what extent they perceive these events as barriers to leading the life they wish. Participants respond on a Likert-type scale (1: never true, to 7: always true) to indicate the extent of their belief in the statements (e.g., Worries get in the way of my success). Low scores on the questionnaire indicate greater psychological flexibility, while high scores indicate greater inflexibility. The test used in this study has shown high internal consistency (Cronbach's $\alpha = .939$). To figure out the relationship between the level of flexibility and the rest of variables, the participants were categorized according to tercile distributions of the total AAQ-II score (Gil-Roales-Nieto, et al., 2016). Thus, three levels were established: High Inflexibility (≥ 34 points), Medium Inflexibility (21-33 points), and Low Inflexibility (≤ 20 points).

The Frost Multidimensional Perfectionism Scale -MPS- (Frost, et al., 1990), was used to assess perfectionism; in its Spanish version developed by Carrasco, et al., (2010). The MPS is a 35-item self-report instrument where participants respond on a Likert-type scale (1.- strongly disagree, to 5.- strongly agree) to a set of statements (e.g., If I fail partly, it is as bad as being a complete failure). The Spanish version has enable the identification of four factors: MPS-F1.- fear of making mistakes (concern over mistakes and doubts about actions); MPS-F2.- external influences (parental expectations and parental criticism), MPS-F3.- expectations of achievement (personal standards and two items of concern over mistakes) y MPS-F4.- organization. These factors can be grouped into an MPS-MALA. - maladaptive perfectionism (Factor 1 and Factor 2) and MPS-ADAP. - adaptive perfectionism (Factor 3 and Factor 4). The internal consistency of the two types of perfectionism in this study was: MPS-MALA. - maladaptive perfectionism ($\alpha = .926$) and MPS-ADAP. - adaptive perfectionism ($\alpha = .838$).

Procedure

Data collection was conducted online from 15th October 2023 to 31st January 2024. The Referees Committee of the Royal Spanish Soccer Federation was contacted, and all Territorial Committees were sent information on the study, requesting their collaboration by disseminating the address needed to access the online questionnaires among the active referees in the federation. The participants had to accept informed consent in order to complete the tests; in the online test, access was not allowed if the option to accept consent was not chosen.

This cross-sectional, anonymous, online study was conducted in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and the Declaration of Helsinki of 1975, revised in 2013. Approved by the Andalusian Ethics Committee of Biomedical Research (Evaluation Committee of Huelva. Act: 05/24. Date of approval:14-May-2024, Internal Code: SICEIA-2024-001020, Study code: 21071.Informed

Consent Statement: Informed consent was obtained from all individual participants included in the study.

Data Analysis

The sample size for hypothesis testing was calculated using G*Power-3 (Faul, et al., 2007). Descriptive analyses (frequencies, percentages, means, and standard deviation) were conducted to characterize the main research variables. The normality of the variables is confirmed using the Kolmogorov-Smirnov test. The Mann-Whitney U test and the Kruskal-Wallis test were used to analyse variables that did not conform to normality. The effect size estimate in the Mann-Whitney U-test was calculated using the formulation $r = Z/\sqrt{n}$, (< 0.099.- insignificant effect size; 0.100-0.299.- small effect size; 0.300-0.499.- medium effect size; > 0.500.- large effect size). The reliability of the tests was calculated using Cronbach's alpha (α). The comparison of quantitative variables was carried out using the Student's t-test for independent groups. The effect size was estimated using Cohen's d (d < 0.2 - small effect size; d = 0.2 to 0.8 - medium effect size and d > 0.8 - large effect size). In the case of quantitative variables with more than two categories, an ANOVA test was conducted, with Snedecor's F statistic and Bonferroni's post hoc tests. The effect size was calculated using Eta Squared η^2, where the η^2 effect size coefficients were evaluated as follows: $0.01 \leq \eta^2 < 0.06$ = a small effect size, $0.06 \leq \eta^2 < 0.14$ = a medium effect size, and $\eta^2 \geq 0.14$ = a large effect size. In the case of categorical variables, the Chi-Square test (χ^2) was used. For categorical variables, Cramer's V was used to estimate the effect size (< 0.2 - small effect size; between 0.2 and 0.6 - moderate effect size and > 0.6 - large effect size). Associations between the variables were analyzed by Pearson and Spearman's Rho correlations and Stepwise linear regression analysis was employed to determine the predictors of psychopathological symptoms. Analyses were conducted using the SPSS statistical package (IBM version 25.0, SPSS Inc Armonk, NY, USA).

Results

An a priori power analysis was conducted using G*Power-3 (Faul, et al., 2007) to determine the minimum sample size required to test the study hypothesis. The results indicated that a sample size of n = 147 for Student's t-test for independent groups was needed to achieve 95% power for detecting a medium effect at a significance criterion of α = .05. Thus, the obtained sample size of n = 156 is adequate to test the study hypothesis.

The sample consisted of 156 main referee, with a mean age of 28.48 years (SD = 7.72) for men and 30.20 years (SD = 4.08) for women. A significant age difference was found between amateur referees (M = 27.36 years, SD = 8.146) and semi-professional/professional referees (M = 30.58 years, SD = 6.193), $t_{(154)} = 2.580$, p = .011, with a medium effect size (d = 0.45). Additionally, significant differences were found in the duration of federation membership between amateur referees (M = 7.77 years, SD = 4.825) and semi-professional/professional referees (M = 11.54 years, SD = 5.766), $t_{(154)} = 4.378$, p < .001, also with a medium effect size (d = 0.71).

A Kolmogorov-Smirnov test was conducted to assess the normality of the distribution of the variables. The results indicated a normal distribution for psychological inflexibility ($Z = 0.823$, $p = .058$), MPS-MALA (maladaptive perfectionism) ($Z = 0.920$, $p = .365$), MPS-F1 (fear of making mistakes) ($Z = 0.783$, $p = .572$), MPS-F2 (external influences) ($Z = 1.152$, $p = .141$), MPS-ADAP (adaptive perfectionism) ($Z = 0.725$, $p = .669$), MPS-F3 (expectations of achievement) ($Z = 0.866$, $p = .441$), and MPS-F4 (organization) ($Z = 1.092$, $p = .184$). However, the psychopathological symptoms and their subscales did not conform to a normal distribution (SA-45: $Z = 1.508$, $p = .021$; depression: $Z = 1.894$, $p = .002$; hostility: $Z = 2.548$, $p < .001$; interpersonal sensitivity: $Z = 2.117$, $p < .001$; somatization: $Z = 1.424$, $p = .035$; anxiety: $Z = 1.928$, $p = .001$; psychoticism: $Z = 2.552$, $p < .001$; obsession-compulsion: $Z = 1.848$, $p = .002$; phobic anxiety: $Z = 3.706$, $p < .001$; paranoid ideation: $Z = 1.595$, $p = .012$).

As evident in Table 1, no statistically significant differences were observed in psychological inflexibility and overall psychopathological symptomatology between amateur and semi-professional/professional referees, except for the paranoid ideation subscale, where amateurs score higher ($d = 0.4$), with a medium effect size. Significant differences were observed in the total score of maladaptive perfectionism ($d = 0.4$) and specifically in MPS-F2 (external influences), where amateur referees scored higher ($d = 0.5$), both with medium effect sizes. Regarding adaptive perfectionism, differences were found in the total score ($d = 0.4$) and MPS-F3 (expectations of achievement), where amateur referees scored higher ($d = 0.4$), both with medium effect sizes.

Table 1

Grouping participants into three categories based on psychological inflexibility revealed significant differences in the total psychopathological symptomatology score and its subscales (see Table 2). These differences were detected using the Kruskal-Wallis test and were highly statistically significant.

Table 2

When conducting post hoc comparisons using the Bonferroni test on the scales assessing perfectionism, significant differences were found among the three groups in maladaptive perfectionism (MPS-PF-MALA), with a large effect size ($\eta^2 = 0.17$): a < b ($p = .020$), a < c ($p < .001$), and b < c ($p = .002$). Similar findings were observed for MPS-F1 (fear of making mistakes) with a large effect size ($\eta^2 = 0.23$): a < b ($p = .002$), a < c ($p < .001$), and b < c ($p <$

.001). However, for the MPS-F2 subscale (external influences), with a medium effect size (η^2 = 0.06), differences were detected only between groups a and c: a = b (p = .605), a < c (p = .013), and b = c (p = .115). In contrast, no significant differences were found among the three groups in adaptive perfectionism (MPS-ADAP): a = b (p = .465), a = c (p = .261), and b = c (p = 1.00). Similarly, no differences were observed in the organization factor (MPS-F4): a = b (p = .835), a = c (p = 1.00), and b = c (p = 1.00). However, significant differences were found between groups a and c in the expectations of achievement subscale (MPS-F3), with a small effect size (η^2 = 0.05): a = b (p = .599), a < c (p = .028), and b = c (p = .211).

Table 3 presents correlations between the different variables. Correlations between subscales of the same test (SA-45 and MPS) were omitted as they were not relevant to the goals of this study; however, all correlations within each test were highly significant.

Psychological inflexibility showed significant correlations with all tests and subscales except the organization factor. Similarly, the organization factor did not correlate significantly with the total psychopathological symptomatology score or any of its subscales. However, the expectations of achievement factor showed significant correlations with all mental health subscales except for phobic anxiety. Specifically, the total adaptive perfectionism score was significantly correlated with the total SA-45 test score and its subscales, except for obsession-compulsion and phobic anxiety.

In the case of maladaptive perfectionism, both the total score and the fear of making mistakes subscale showed significant correlations with the SA-45 total score and the nine subscales. However, the external influences factor did not correlate significantly with the depression, somatization, or phobic anxiety subscales.

Table 3

Linear regression models (see Table 4) were generated with psychopathological symptomatology scores as the predicted variable and psychological inflexibility, adaptive perfectionism, and maladaptive perfectionism as predictor variables. Three significant models were identified.

In the first model, psychological inflexibility explained 51.2% of the variance in psychopathological symptomatology, with a predictive power (β) of .716 and a semi-partial correlation of .716. In the second model, including maladaptive perfectionism significantly increased the explanatory capacity to 53.7%. However, the predictive power of psychological inflexibility decreased to β = .640, while maladaptive perfectionism yielded a β = .176. Semi-

partial correlations in the second model were .577 for psychological inflexibility and .159 for maladaptive perfectionism.

Table 4

In the third model, the inclusion of adaptive perfectionism significantly increased the overall explanatory power to 54.0%. However, the predictive capacity of adaptive perfectionism fell short of significance (β = .069), while maladaptive perfectionism also lost its significance as a predictor in the model. In contrast, psychological inflexibility showed slightly higher predictive power compared to the second model (β = .646). Examination of semi-partial correlations revealed values of .579 for psychological inflexibility, .099 for maladaptive perfectionism, and .055 for adaptive perfectionism.

Discussion

This study examined the relationship between psychological inflexibility, perfectionism, and psychopathological symptomatology in soccer referees. Our first hypothesis predicted that amateur referees would show greater psychopathological symptomatology compared to semi-professional and professional referees. However, our findings did not fully support this hypothesis, as no significant differences were observed between these two groups, with the exception of paranoid ideation. This lack of differences contradicts the existing literature demonstrating that referees in professional categories typically obtain lower scores on mental health indicators compared to their amateur counterparts (Carson, et al., 2020; Lima, et al., 2023).

As mentioned, significant differences were found in paranoid ideation, with amateur referees scoring higher. This may be attributed to heightened concerns about assault and limited resources in lower-level categories of refereeing (Cuskelly & Hoyes, 2013). These factors could be particularly relevant considering the components of the paranoid ideation subscale, such as attributing problems to others, distrust of people, feeling scrutinized or talked about, and unrecognized achievements, which may be linked to performance and resource availability. The observed difference cannot be solely attributed to the younger age of amateur referees, as existing literature indicates no significant differences in psychopathological symptoms based on this factor (Fonseca-Pedrero, et al., 2009; Scott, et al., 2009).

As a second hypothesis, it was predicted that greater psychological inflexibility would be positively associated with higher scores on psychopathological symptoms. Our findings fully support this hypothesis and align with previous research. In the general population, psychological rigidity has been strongly linked to distress, anxiety, depression, and other mental

health issues (Arbinaga & Cantón, 2013; Ruiz, et al., 2013), with the associated behavioral patterns often hindering mental health improvement and potentially exacerbating problems (Trompetter, et al., 2015; Wicksell, et al., 2010). Similarly, in sports, low psychological flexibility has been linked to reduced behavioral effectiveness and missed opportunities for optimal performance (Moore, 2009). Additionally, significant associations have been observed between psychological inflexibility and symptoms of mental health problems among athletes (Chen, et al., 2017; Zhang, et al., 2014).

On the other hand, our third hypothesis anticipated that psychological inflexibility would show a positive association with maladaptive perfectionism and a negative association with adaptive perfectionism. Our data partially support this hypothesis since positive correlations were observed in both cases, indicating that higher scores in psychological inflexibility correspond to higher scores in both adaptive and maladaptive perfectionism.

Psychological inflexibility has been found to correlate with perfectionism across various contexts (Habibi-Asgarabad, et al., 2023; Miles, et al., 2023). High perfectionism often exacerbates psychological inflexibility, characterized by rigid responses to thoughts, feelings, and bodily sensations, leading to psychological discomfort and avoidance behaviors (Crosby, et al., 2013). A central feature of psychological inflexibility is avoidance, and perfectionists are frequently inclined to employ unhelpful avoidance strategies, such as experiential avoidance (Santanello & Gardner, 2007), avoidant coping (Noble, et al., 2014), and emotional suppression (Richardson, et al., 2014), particularly in response to challenges.

Our fourth hypothesis predicted that psychopathological symptomatology would show a negative relationship with adaptive perfectionism and a positive relationship with maladaptive perfectionism. Our findings partially support this hypothesis, as the expected negative relationship between psychopathological symptomatology scores and adaptive perfectionism was not found, whereas a positive relationship was observed with maladaptive perfectionism.

These relationships have previously been reported in the work of Stoeber and Otto (2006), where perfectionism was linked to various psychopathologies. In the context of sports, while perfectionism is often seen as a motivator, it can also present challenges or difficulties (Hill, et al., 2015). Specifically, perfectionism has been associated with anxiety (Schaal, et al., 2011; Stoeber, et al., 2007), depression (Crocker, et al., 2014; Gorczynski, et al., 2017; Gulliver, et al., 2015; Nixdorf, et al., 2016; Schaal, et al., 2011; Tashman, et al., 2010; Wolanin, et al., 2016) and stress (Crocker, et al., 2014; Schaal, et al., 2011; Tashman, et al., 2010).

Nevertheless, the results of this paper do reinforce Hill, et al. (2008) in stating that problems were mainly associated with maladaptive perfectionism, but adaptive perfectionism could be observed to generate distress. This distinction can be understood by considering that adaptive

perfectionism emphasizes behavioral organization and goal setting to enhance sporting performance, whereas maladaptive perfectionism focuses on responses to errors or failure to achieve goals. Thus, perfectionism should be viewed as a vulnerability factor characterized by cognitive rigidity and behavioral inflexibility (Delor, et al., 2019).

Among the limitations of this study are the sample size and gender balance, since female participation was low. Additionally, the design and methodology employed preclude establishing causal relationships, while reliance on self-reported data may introduce response biases. Future research would benefit from greater control over refereeing contexts. Designs that assess referees at different points in the season, considering factors such as injuries, travel demands, and number and significance of matches officiated, would help to enhance our understanding of the factors involved in the mental health issues associated with this profession. Finally, when studying mental health in this population, it is also important to consider non-sporting activities and medical histories.

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Institutional Review Board Statement

All procedures were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and the Declaration of Helsinki of 1975, revised in 2013. Approved by the Andalusian Ethics Committee of Biomedical Research (Evaluation Committee of Huelva. Act: 05/24. Date of approval:14-May-2024, Internal Code: SICEIA-2024-001020, Study code: 21071.
Informed Consent Statement: Informed consent was obtained from all individual participants included in the study.

Data Availability Statement

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Conflicts of Interest

The authors report no conflict of interest. The authors alone is responsible for the content and writing of the paper.

Authors' contributions

1.- **Félix Arbinaga** (ORCID: 0000-0001-6649-1904**)**: Assess for research problem, design protocol, he has coordinated the conceptual protocol of the research, documentary review and follow up, Finalize Methodology, collecting data of the study, & Writing-original draft.
2.- **Emilio Moreno-San-Pedro** (ORCID: 0000-0002-3329-5517): Conceptualization of research problem, revision of protocol, editing session, help in conduction session and follow up, data curation, & review and editing final draft.
3.- **María-Isabel Mendoza-Sierra** (ORCID: 0000-0002-5825-9440): Write significance of research problem, help in translation of session, designing session, finalize Methodology, designing data software, & interpretation of data. All authors read and approved the final manuscript

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Table 1(on next page)

Table

Table 1.- Symptom Assessment-45 Questionnaire scores, Multidimensional Perfectionism Scale (MPS) and AAQ-II-Psychological Inflexibility according to referee category.

	Total 156	Amateur 99 (63.5)	Semiprofesional/ Profesional 57 (36.5)	*Z U Mann-Whitney*	*p*
SA-45-TOTAL	33.71 (26.07)	35.13 (25.85)	31.25 (26.48)	- 1.222	.222
Depression	4.46 (4.25)	4.78 (4.59)	3.89 (3.54)	- 0.861	.389
Hostility	2.70 (3.12)	2.81 (3.24)	2.51 (2.93)	- 0.528	.597
Interpersonal Sensitivity	4.06 (3.98)	4.33 (4.03)	3.60 (3.88)	- 1.349	.177
Somatisation	4.33 (3.58)	4.35 (3.34)	4.30 (3.99)	- 0.670	.503
Anxiety	3.94 (3.62)	3.96 (3.62)	3.91 (3.66)	- 0.219	.827
Psychoticism	2.50 (2.85)	2.67 (2.95)	2.21 (2.66)	- 1.159	.246
Obsession-Compulsion	5.47 (3.83)	5.72 (3.79)	5.04 (3.89)	- 1.167	.243
Phobic Anxiety	1.47 (2.61)	1.27 (2.28)	1.81 (3.09)	- 1.143	.253
Paranoid Ideation	4.78 (3.83)	5.24 (3.88)	3.98 (3.64)	- 2.185	.029
				$t_{(gl=154)}$	
MPS-MALA	47.44 (9.99)	48.80 (9.64)	45.09 (10.23)	2.263	.025
MPS-F1	24.83 (8.53)	25.75 (8.71)	23.25 (8.03)	1.777	.078
MPS-F2	18.83 (7.29)	20.04 (7.72)	16.72 (5.97)	2.800	.006
MPS-ADAP	43.66 (14.19)	45.79 (14.61)	39.96 (12.74)	2.509	.013
MPS-F3	26.06 (7.10)	26.98 (6.76)	24.47 (7.45)	2.148	.033
MPS-F4	21.38 (4.77)	21.82 (4.83)	20.61 (4.62)	1.524	.129
AAQ-II	18.57 (9.00)	18.9 (9.37)	17.98 (8.37)	0.618	.538

Note: For quantitative variables M(SD) and categorical variables n(%). SA-45.- Symptom Assessment-45 Questionnaire; MPS-MALA.- Maladaptive Perfectionism; MPS-F1.- Fear of Making Mistakes; MPS-F2.- External Influences; MPS-ADAP.- Adaptive Perfectionism; MPS-F3.- Expectations of Achievement; MPS-F4.- Organization; AAQ-II.- The Acceptance and Action Questionnaire (Psychological Inflexibility).

Table 2.- Symptom Assessment-45 Questionnaire scores, Multidimensional Perfectionism Scale (MPS) according to AAQ-II-Psychological Inflexibility categories.

	Low PI (a) 97(62.2)	Medium PI (b) 48(30.8)	High PI (c) 11(7.1)	$F_{(2,155)}$	p
MPS-MALA	40.19 (12.92)	46.52 (13.25)	61.82 (13.30)	15.243	< .001
MPS-F1	22.32 (7.14)	27.04 (8.23)	37.36 (7.89)	22.656	< .001
MPS-F2	17.87 (6.99)	19.48 (6.83)	24.45 (9.49)	4.509	.013
MPS-ADAP	46.29 (9.94)	48.79 (10.37)	51.73 (7.23)	2.126	.123
MPS-F3	25.16 (6.88)	26.75 (7.16)	31.00 (6.99)	3.794	.025
MPS-F4	21.12 (4.69)	22.04 (5.08)	20.73 (4.13)	0.702	.497
				Kruskal-Wallis $\chi^2_{(gl=2)}$	
SA-45-TOTAL	21.39 (15.64)	49.33 (22.09)	74.18 (37.97)	57.359	<.001
Depression	2.53 (2.49)	6.90 (3.76)	10.82 (6.66)	53.070	<.001
Hostility	1.66 (2.03)	3.98 (3.37)	6.27 (5.10)	25.530	<.001
Interpersonal Sensitivity	2.34 (2.35)	6.08 (3.79)	10.45 (5.63)	44.327	<.001
Somatisation	3.37 (3.07)	5.69 (3.19)	6.91 (5.89)	19.723	<.001
Anxiety	2.18 (2.11)	6.27 (3.18)	9.36 (4.93)	61.362	<.001
Psychoticism	1.42 (1.62)	3.81 (3.02)	6.27 (4.74)	36.322	<.001
Obsession-Compulsion	3.89 (2.85)	7.73 (3.54)	9.55 (4.82)	43.133	<.001
Phobic Anxiety	0.77 (1.39)	2.17 (3.15)	4.55 (4.76)	17.557	<.001
Paranoid Ideation	3.24 (2.77)	6.71 (3.53)	10.00 (5.00)	40.985	<.001

Note: - For quantitative variables M(SD) and categorical variables n(%). Low PI.- Low Psychological Inflexibility; Medium PI.- Medium Psychological Inflexibility; High PI.- High Psychological Inflexibility; MPS-MALA.- Maladaptive Perfectionism; MPS-F1.- Fear of Making Mistakes; MPS-F2.- External Influences; MPS-ADAP.- Adaptive Perfectionism; MPS-F3.- Expectations of Achievement; MPS-F4.- Organization; SA-45.- Symptom Assessment-45 Questionnaire.

Table 3.- Bivariate Correlation between scores on psychological inflexibility, perfectionism, and psychopathological symptoms.

		1	2	3	4	5	6	7
1	AAQ-II	1						
2	MPS-MALA	.432/<.001						
3	MPS-F1	.503/<.001						
4	MPS-F2	.253/.001						
5	MPS-ADAP	.177/.027						
6	MPS-F3	.241/.002						
7	MPS-F4	.013/.868						
8	SA-45-TOTAL	.725/<.001	.403/<.001	.505/<.001	.210/.008	.274/.001	.345/<.001	.056/.484
9	Depression	.727/<.001	.295/<.001	.390/<.001	.149/.064	.176/.028	.248/.002	-.032/.695
10	Hostility	.450/<.001	.336/<.001	.394/<.001	.194/.015	.258/.001	.333/<.001	.023/.772
11	Inter. Sensitivity	.652/<.001	.344/<.001	.436/<.001	.187/.019	.224/.005	.298/<.001	.020/.800
12	Somatisation	.450/<.001	.186/.020	.278/<.001	.065/.420	.176/.028	.184/.022	.117/.147
13	Anxiety	.727/<.001	.356/<.001	.443/<.001	.181/.024	.264/.001	.320/<.001	.087/.282
14	Psychoticism	.600/<.001	.447/<.001	.496/<.001	.291/<.001	.245/.002	.319/<.001	.052/.518
15	Obses-Compuls	.622/<.001	.323/<.001	.397/<.001	.169/.035	.145/.072	.214/.007	-.028/.732
16	Phobic Anxiety	.398/<.001	.225/.005	.276/<.001	.113/.161	.081/.315	.148/.065	-.044/.587
17	Paran Ideation	.604/<.001	.388/<.001	.471/<.001	.215/.007	.309/<.001	.366/<.001	.093/.247

Note: - r/p.- Pearson Correlation/Significance (Spearman's Rho in the SA-45) (all correlations of subscales within each instrument (SA-45 and MPS) have been removed as they are irrelevant to the objective, although they are all highly significant); MPS-MALA.- Maladaptive Perfectionism; MPS-F1.- Fear of Making Mistakes; MPS-F2.- External Influences; MPS-ADAP.- Adaptive Perfectionism; MPS-F3.- Expectations of Achievement; MPS-F4.- Organization; AAQ-II.- The Acceptance and Action Questionnaire (Psychological Inflexibility); SA-45.- Symptom Assessment-45 Questionnaire.

Table 4.- Lineal regression analysis, taking psychopathological symptoms (SA-45) as the predicted variable and psychological inflexibility and adaptive-maladaptive perfectionism as predictor variables, in soccer referees.

	β	*t*	*p*	R^2	ΔR^2	*p*	*F*	*p*
Model 1				.512	.512	<.001	$F_{(1,155)} = 161.537$	<.001
AAQ-II	.716	12.710	<.001					
Model 2				.537	.025	.004	$F_{(2,155)} = 88.776$	<.001
AAQ-II	.640	10.488	<.001					
MPS-PF-MALA	.176	2.886	.004					
Model 3				.540	.003	.315	$F_{(3,155)} = 59.528$	<.001
AAQ-II	.646	10.536	<.001					
MPS-PF-MALA	.133	1.792	.075					
MPS-PF-ADAP	.069	1.008	.315					

Note: AAQ-II.- The Acceptance and Action Questionnaire (Psychological Inflexibility); MPS-MALA.- Maladaptive Perfectionism; MPS-ADAP.- Adaptive Perfectionism.