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Perfection behind the whistle: Perfectionism and perceived performance in soccer referees

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A B S T R A C T

Purpose: The purpose of the study was to examine the relationship between self-oriented perfectionism, socially prescribed perfectionism, cognitive appraisals, psychobiosocial experiences, and self-evaluated performance in soccer referees, using the multi-states (MuSt) theory as the theoretical framework.
Method: Participants were 67 soccer referees (57 men and 10 women, M_{age} = 23.03 years, SD = 2.71) with 3–15 years (M = 7.36, SD = 2.44) of refereeing experience in first-class, promotion, or excellence matches. They completed questionnaires assessing perfectionism, competitive appraisals, and psychobiosocial experiences two days before a game, and self-evaluated their performance one day after the event.
Results: Results revealed significant positive correlations (r > 0.20) between self-oriented perfectionism and socially prescribed perfectionism with challenge appraisals, functional psychobiosocial experiences, and self-evaluated performance. Serial multiple mediation analyses showed positive indirect effects of both self-oriented and socially prescribed perfectionism on self-evaluated performance via challenge appraisals and psychobiosocial experiences (β = 0.023, 95 % CI = 0.000, 0.097, and β = 0.097, 95 % CI = 0.003, 0.253, respectively).
Conclusion: The findings suggest that both dimensions of perfectionism may positively influence perceived performance when viewed as a positive challenge and associated with functional experiences. The study advances our understanding of the effects of perfectionism on perceived performance in the context of soccer refereeing. Practical implications for referee training programs are provided.

1. Introduction

Sport officials have a fundamental responsibility to ensure fair play and respect for the rules [1]. In soccer, referees enforce regulations, make real-time decisions, and maintain integrity of the game [2,3]. Their authority includes issuing penalties, awarding goals, managing disciplinary actions [4], and their decisions serve to balance the game, maintain discipline, and ensure player safety [5]. Thus, the ability of soccer referees to be accurate, impartial, and fair is vital. They face a number of challenges, including pressure

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to perform at a high standard, making critical decisions under time constraints, and dealing with external disturbances such as crowd noise, physical and psychological intimidation, and player interference [6,7]. These challenges can lead to high levels of stress, fear of failure, and impaired decision-making [8].

In the context of sport, multi-states theory (MuSt [9]) has been proposed as a theoretical framework for understanding performance-related experiences and their effects, and for providing individuals with effective self-regulation strategies to optimize performance and enhance well-being. MuSt theory expands upon the individual zones of optimal functioning (IZOF) model [10,11] and the multi-action plan (MAP) model [12,13] to view performance as a dynamic and multidimensional process that involves the interaction between personality traits, task, and environment (antecedents), individual appraisals of perceived resources to handle task demands (mediators), emotion-related experiences (mediators), and performance (outcome).

Perfectionism is a personality trait that has attracted considerable research interest in sport (see Ref. [14]) and has the potential to influence officiating performance. To examine perfectionism in referees, we referred to the multidimensional model of perfectionism proposed by Hewitt and Flett [15], which distinguishes three dimensions of perfectionism: self-oriented, socially prescribed, and other-oriented. Self-oriented perfectionism involves the tendency to set high personal standards and rigorously evaluate one's own actions. On the other hand, socially prescribed perfectionism entails the belief that significant others hold unrealistic expectations, act as harsh critics, and provide approval based on performance standards. Other-oriented perfectionism refers to criticizing others if they fail to perform perfectly. The current study focused on the first two dimensions. By understanding these dimensions of perfectionism, we can gain insights into how referees' self-imposed standards and expectations from others may impact their perceived overall performance on the field.

According to MuSt theory [9], the relationship between perfectionism and performance outcomes is influenced by an individual's perception of performance as either a challenge or a threat. Like other theoretical frameworks [16,17], within MuSt theory these cognitive evaluations play a crucial role in shaping performance. Challenge appraisal arises when individuals believe they have sufficient resources to handle a task, and perceive task demands as opportunities for growth. Threat appraisal occurs when individuals perceive their resources as insufficient, and task demands as potentially harmful or exceeding their resources. Challenge appraisal leads to high task engagement and functional psychobiosocial experiences, which in turn, mediate the relationship with functional performance outcomes. Conversely, threat appraisal leads to low task engagement and detrimental psychobiosocial experiences for performance [18].

Psychobiosocial experiences (or states) individuals encounter in relation to their performance result from the interplay between hedonic valence (pleasant and unpleasant experiences) and functionality (functional and dysfunctional effects on performance) dimensions. These experiences are influenced by cognitive (e.g., emotion, confidence, assertiveness), biological (e.g., bodily correlates of emotion), and social (e.g., social support) factors (see Refs. [19,20]). Functional psychobiosocial experiences help individuals mobilize their resources, while dysfunctional experiences arise when individuals perceive a lack of resources or view the situation as exceeding their resources, thus, facing difficulties in coping [20].

Research on how antecedents, cognitive appraisals, and psychobiosocial experiences relate to performance in sports has gained attention. A study on ice-hockey players involving a 30-day intervention program following the self-regulation principles of MuSt theory was beneficial for self-regulation by increasing participants' vagal tone [21]. In another investigation MuSt theory was applied to study two perfectionism dimensions, cognitive appraisals, and psychobiosocial states [18]. Challenge appraisals were found to mediate self-oriented perfectionism, in particular perfectionistic striving and functional states, whereas threat appraisals mediated socially prescribed perfectionism or perfectionistic concerns and dysfunctional states. These studies provide empirical evidence to support tenets of MuSt theory.

1.1. Study purpose

Ruiz et al. [18] examined the effects of perfectionism, in particular perfectionistic striving and concerns, on psychobiosocial experiences, but they did not examine the relationships with performance. In the current study we aimed to extend the literature by investigating the relationship with performance via both cognitive appraisals and psychobiosocial experiences as mediators in soccer referees. Based on previous research [18], we hypothesized that referees' self-oriented perfectionism would be positively correlated with challenge appraisals, functional psychobiosocial experiences, and self-evaluated performance (Hypothesis 1). We also predicted a positive indirect relationship between referees' self-oriented perfectionism and self-evaluated performance via challenge appraisals and psychobiosocial experiences (Hypothesis 2). Regarding socially prescribed perfectionism, we expected it to correlate positively with threat appraisals and negatively with both psychobiosocial experiences and self-evaluated performance (Hypothesis 3). Finally, we predicted a negative indirect relationship between socially prescribed perfectionism and self-evaluated performance via threat appraisals (Hypothesis 4). Correlation analysis was conducted to examine Hypotheses 1 and 3, while serial multiple mediation analysis was performed to test Hypotheses 2 and 4.

2. Method

2.1. Participants

At the beginning of the competitive season in autumn 2021, the second author, who is involved in soccer refereeing, contacted representatives of a soccer referee association located in a central Italian region and explained the purpose of the study to them. Subsequently, participants were recruited through e-mail and telephone calls. Data collection was conducted in January 2022, in the

middle of the competitive season. To be included in the study, participants had to be of legal age, members of the regional committee of soccer referees, and have at least three years of refereeing experience.

The sample ($N = 67$) included 43 soccer referees and 24 assistant referees (57 men and 10 women, $M_{age} = 23.03$ years, $SD = 2.71$). Twenty-one were assigned to officiate first-class (*prima categoria*) matches, 19 to promotion (*promozione*) matches, and 27 to excellence (*eccellenza*) matches. Their refereeing experience ranged from 3 to 15 years ($M = 7.36$, $SD = 2.44$; from 3 to 5 yrs, $n = 18$; from 6 to 10 yrs, $n = 45$; from 11 to 15 yrs, $n = 4$), and they were involved in officiating at least 40 matches per year. The participants' refereeing activity was performed in their spare time and was not a full-time professional occupation.

2.2. Measures

2.2.1. Perfectionism

To assess self-oriented and socially prescribed perfectionism, we used two subscales from the Performance Perfectionism Scale for Sport (PPS–S [22]), a measure developed based on Hewitt and Flett's [15] perfectionism model. The Self-Oriented Performance Perfectionism subscale (four items) assesses the self-imposed pressure to perform perfectly (e.g., "I put pressure on myself to perform perfectly"). The Socially Prescribed Performance Perfectionism subscale (four items) measures the perception of external criticism if the individual does not perform perfectly (e.g., "People criticize me if I do not perform perfectly"). The items of this questionnaire focus on the subdomain of sport performance rather than on a broader context encompassing life or sport in general. Participants' ratings on a seven-point Likert scale ranged from 1 ("strongly disagree") to 7 ("strongly agree"). Hill et al. [22] provided evidence of reliability and validity for all subscales of the PPS-S across five samples of youth athletes. In a sample of adult athletes, reliability alpha values for the two scales were 0.75 and 0.78 [23]. Back-translation procedures [24] were used to translate and adapt the PPS-S to the Italian language.

2.2.2. Cognitive appraisals

The 12-item Challenge and Threat in Sport (CAT-Sport [25]) scale was used to assess referees' cognitive appraisals of an upcoming important match. Referees were asked to rate the extent to which they perceived the game as a challenge (7 items; e.g., "A challenging situation motivates me to increase my efforts") and a threat (5 items; e.g., "I am worrying about the kind of impression I will make"). Responses were scored on a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). Reliability alpha values for challenge and threat were 0.83 and 0.90, respectively [25]. Following back-translation procedures [24], the CAT-Sport underwent translation and adaptation into the Italian language.

2.2.3. Psychobiosocial experiences

The psychobiosocial experiences of referees were evaluated using the PESD-Sport [19], a 30-item scale developed in the Italian language. It comprises 10 subscales, each containing 3 items. The subscales are: emotion u/p (unpleasant/pleasant), confidence, anxiety, assertiveness, and cognitive (psychological modality); bodily-somatic and motor-behavioral (bodily modality); and operational, communicative, and social support (social modality). Each item is anchored by an adjective and its antonym in a semantic differential format. For example, "unconfident" and "submissive" are linked to their "confident" and "fighting spirit" antonyms, respectively. Adjectives considered dysfunctional for performance are on the left side of a Likert scale, while functional antonyms are on the right side. Referees were asked to rate how they usually feel before an important game. Items are scored on a bipolar Likert scale ranging from 4 (very much) to 0 (neither … nor) on the "dysfunctional" side and from 0 to 4 on the "functional" side. Ratings on the dysfunctional side are then transformed into negative scores. The PESD-Sport has been shown to have good psychometric properties in a sample of Italian athletes [19], with omega coefficients for the subscales ranging from 0.740 (communicative) to 0.875 (social support).

2.2.4. Self-evaluated performance

To assess refereeing performance, five experts from the referee association of the Italian soccer federation (Federazione Italiana Giuoco Calcio) were asked to identify specific skills considered essential for good refereeing performance. Each expert was asked to identify these skills independently, then they met and discussed until a consensus was reached on the skills that were the best indicators of good performance and therefore should be included in the questionnaire. Eight skills were identified, including: Identifying player offside, adjusting movement on the field according to game situations, identifying different types of fouls leading to decisions ranging in severity from low (e.g., free kick without disciplinary action) to high (e.g., penalty kick and ejection). Guidelines for the construction of efficacy measures in sport were followed [26]. The day after the game, referees were asked to reflect on their past performance and rate each item on an 11-point Likert scale anchored by 1 (extremely poor) and 11 (excellent). A total score was calculated by summing the scores of the individual items.

2.3. Procedure

The informed consent, demographic questions, and questionnaires were administered using the Google Forms online platform compatible with computers and mobile devices. The online survey was designed to ensure that only one answer was selected for each item and to prevent incomplete responses. This resulted in no missing data, with all participants who started the survey completing it. Before starting the questionnaire, participants were properly informed about the purpose of the study, the confidentiality of their individual responses, and the voluntary nature of their involvement. Links to the questionnaire were distributed via email one week

before the event. A friendly reminder to complete the questionnaire assessing perfectionism, competitive appraisals, and psychobiosocial experiences on time was made by telephone two days before the game. In addition, participants' self-evaluated performance was assessed on the day after the event. The initial assessment, conducted prior to the event, required approximately 15 min for completion, while the subsequent assessment, conducted after the event, took approximately 5 min.

2.4. Declaration

All participants gave their consent to participate in the study and the publication of their anonymized data. The study adhered to the principles outlined in the Declaration of Helsinki and received approval from the local ethics committee of "G. d'Annunzio" University of Chieti-Pescara (No.19, September 09, 2021).

2.5. Data analysis

Before the main analysis, we checked for the presence of univariate or multivariate outliers and possible violations to multivariate normality, linearity, and homoscedasticity [27]. In particular, we screened the mean total scores of the variables (i.e., Self-Oriented Performance Perfectionism, Socially Prescribed Performance Perfectionism, Challenge Appraisal, Threat Appraisal, Psychobiosocial Experiences, and Self-evaluated Performance). To test Hypotheses 1 and 3, we computed descriptive statistics and Pearson product-moment correlation coefficients between variables. We interpreted the correlation coefficients according to Zhu's [28] indications, which are as follows: 0–0.19 = no correlation, 0.20–0.39 = low correlation, 0.40–0.59 = moderate correlation, 0.60–0.79 = moderately high correlation, and >0.80 = high correlation. We assessed the reliability of each scale using McDonald's omega (ω) values.

To test Hypotheses 2 and 4, we conducted serial multiple mediation analysis in Mplus (version 8.5 [29]), in which the relationship between perfectionism and perceived outcomes was mediated by cognitive appraisals and psychobiosocial experiences. The amount of influence the predictor variables (i.e., perfectionism, cognitive appraisals, and psychobiosocial experiences) had on the criterion variable (i.e., perceived outcomes) was also assessed using multiple regression analysis. Sample size estimated with G*Power 3.1.9.7 [30] for linear regression, entering an effect size of $f^2 = 0.20$ (medium effect), an alpha level of 0.05, and a desired power $(1 - \beta)$ of 0.80, with 3 predictors, yielded a sample size of 59. Moreover, the rule of thumb proposed by several authors [27,31] suggests that at least ten participants should be included per each estimated parameter. In the present study, we needed to estimate six parameters, so the current sample size was appropriate.

Indirect effects were assessed using maximum likelihood estimator (ML) and the bias-corrected bootstrap method. This method involves resampling the data 5000 times and computing the indirect effect for each resample. The 95 % confidence interval (CI) around the standardized estimate (β) was then calculated. The indirect effect is considered significant when its CI does not include zero [32].

3. Results

Four univariate outliers were identified using the z-score criterion (z > |3.29|) and then winsorized [33] by replacing the top and bottom scores with the next highest or lowest value in the distribution, plus or minus .01. Mahalanobis' distances ($p < .001$) on winsorized data did not provide evidence for multivariate outliers. The assumptions of normality and multicollinearity were met, and reliability values were acceptable for all measures (see Table 1). Multivariate analysis of variance (MANOVA) of the variable scores of referees assigned to officiate matches in different categories (i.e., first-class, promotion, excellence) did not yield significant differences, Wilk's $\lambda = 0.762$, $F(12, 118) = 1.429$, $p < .162$. Therefore, subsequent analyses were conducted on the whole sample.

In the entire sample, the mean scores for Self-Oriented Performance Perfectionism were significantly higher than Socially Prescribed Performance Perfectionism scores ($p < .001$). Moreover, participants' mean scores for Challenge Appraisal were higher than Threat Appraisal ($p < .001$), suggesting a more positive evaluation of challenges. Notably, positive mean scores for Psychobiosocial Experiences, indicating their perceived beneficial effects on performance, were accompanied by high mean scores for Self-evaluated Performance.

According to Hypothesis 1, Self-Oriented Performance Perfectionism was positively correlated with Challenge Appraisal, Threat Appraisal, and Psychobiosocial Experiences (Table 1). Contrary to Hypothesis 3, the same trend of positive correlations was found for Socially Prescribed Performance Perfectionism. The correlation between Challenge Appraisal and Psychobiosocial Experiences was

Table 1

Descriptive statistics, pearson product-moment correlation coefficients, and McDonald's omega (ω) values (N = 67).

Variables	M	SD	Skewness	Kurtosis	1	2	3	4	5	ω
1. Self-oriented performance perfectionism	4.757	0.842	−0.196	−0.034	–					.671
2. Socially prescribed performance perfectionism	3.769	0.823	−0.431	0.031	.462§	–				.703
3. Challenge appraisal	4.585	0.644	−0.270	−0.292	.232*	.271*	–			.733
4. Threat appraisal	2.281	0.858	0.512	−0.364	.267*	.259*	−.140	–		.884
5. Psychobiosocial experiences	2.239	0.593	−0.123	−0.290	.255*	.244*	.296*	−.147	–	.894
6. Self-evaluated performance	8.464	1.161	−0.129	−0.123	.252*	.247*	.367*	−.097	.495§	.878

Note. M = mean, *SD* = standard deviation. Correlation *low, §moderate (Zhu, 2012).

also positive. Furthermore, all variables except Threat Appraisal were positively correlated with Self-evaluated Performance.

Two serial multiple mediation analyses were conducted entering Self-Oriented Performance Perfectionism and Socially Prescribed Performance Perfectionism as predictors of Self-evaluated Performance, while Challenge Appraisal and Psychobiosocial Experiences were the two serially related mediators. Multiple regression analysis was also performed to assess the amount of influence of the predictor variables on the criterion variable. Prior to the main analysis, the data for the Socially Prescribed Performance Perfectionism variable underwent a logarithmic transformation to reduce skewness. This transformation successfully reduced the skewness from −0.431 to a more acceptable value of 0.029. Threat Appraisal was not included in the analysis because it was not significantly related to either Psychobiosocial Experiences or Self-evaluated Performance.

In line with Hypothesis 2, findings of the first mediation analysis showed significant indirect effects from: (a) Self-Oriented Performance Perfectionism to Self-evaluated Performance via Challenge Appraisal and Psychobiosocial Experiences, $\beta = 0.023$, 95 % CI = 0.000, 0.097; and (b) from Challenge Appraisal to Self-evaluated Performance through Psychobiosocial Experiences, $\beta = 0.101$, 95 % CI = 0.005, 0.255 (Fig. 1). Regression analysis showed that the variables in the model explained 30.7 % of the variance in Self-evaluated Performance (see Table 2). In contrast to Hypothesis 4, the second mediation analysis yielded significant indirect effects from: (a) Socially Prescribed Performance Perfectionism to Self-evaluated Performance via Challenge Appraisal and Psychobiosocial Experiences, $\beta = 0.028$, 95 % CI = 0.001, 0.113; and (b) from Challenge Appraisal to Self-evaluated Performance through Psychobiosocial Experiences, $\beta = 0.097$, 95 % CI = 0.003, 0.253 (Fig. 2). The variance explained was 30.8 % (Table 2).

4. Discussion

The present study aimed to explore the relationship between perfectionism, cognitive appraisals, functional psychobiosocial experiences, and self-evaluated performance among soccer referees. The study was grounded in MuSt theory [9], which considers performance as a dynamic and multidimensional process influenced by different factors, including personality traits, cognitive appraisals, and emotional experiences. The results provide insights into how referees' perfectionistic tendencies can impact their perceived performance and the mediating role of cognitive appraisals and psychobiosocial experiences.

Results indicated that referees' self-oriented performance perfectionism was positively correlated with challenge appraisals, functional psychobiosocial experiences, and self-evaluated performance (Hypothesis 1). We also observed positive indirect relationships between self-oriented perfectionism and self-evaluated performance via challenge appraisals and psychobiosocial experiences (Hypothesis 2). Interestingly, in contrast to Hypotheses 3 and 4, the same pattern of correlational results and indirect relationships was found for socially prescribed performance perfectionism. Thus, the results suggest that both self-oriented and socially prescribed perfectionism have the potential to impact referees' perceived performance in a similar way. These findings challenge previous assumptions that socially prescribed perfectionism is solely associated with maladaptive motivation and emotions (see Ref. [34]). While this form of perfectionism can indeed involve concerns about external criticism, it seems that soccer referees who experience this type of perfectionism may still interpret high-pressure situations as challenges rather than threats, leading to more functional psychobiosocial experiences and enhanced self-evaluated performance. Support for this hypothesis may be found in the observation that referees reported higher self-oriented perfectionism scores than socially prescribed perfectionism. This observation is consistent with the view that beneficial effects on performance can occur when the level of self-oriented perfectionism outweighs socially prescribed perfectionism [35]. In a review and reanalysis of the literature, Hill et al. [35] found that self-oriented perfectionism displayed a mixture of positive relationships with motivational variables (e.g., task orientation, ego orientation, harmonious and obsessive passion), emotions, and athletic performance. In contrast, socially prescribed perfectionism was associated with less desirable outcomes (i.e., it was positively related to ego orientation, obsessive passion, external regulation, amotivation, and unpleasant emotions) and weakly related to pleasant emotions and athletic performance. However, the interaction between the two forms of perfectionism was found to be important: higher levels of self-oriented perfectionism may benefit people with socially prescribed perfectionism.

A possible explanation for the findings can be attributed to the nature of the referees' involvement in sport. In particular, refereeing was not the main occupation of the participants, but it was carried out in their spare time, outside of their personal work commitments. This suggests that the referees in the study chose to engage in refereeing as a leisure activity for enjoyment and personal fulfillment
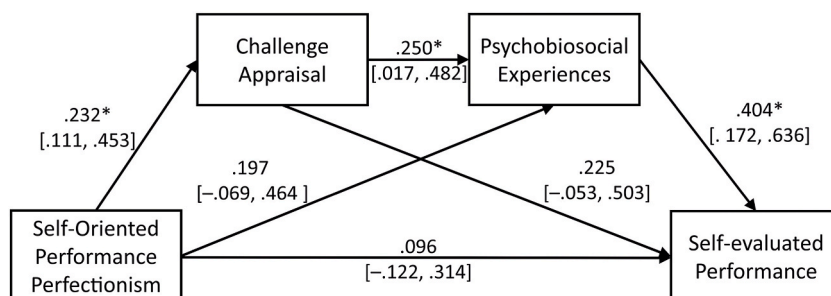
Fig. 1. Serial multiple mediation model depicting the relationship between Self-Oriented Performance Perfectionism and Self-evaluated Performance, mediated by Challenge Appraisal and Psychobiosocial Experiences.
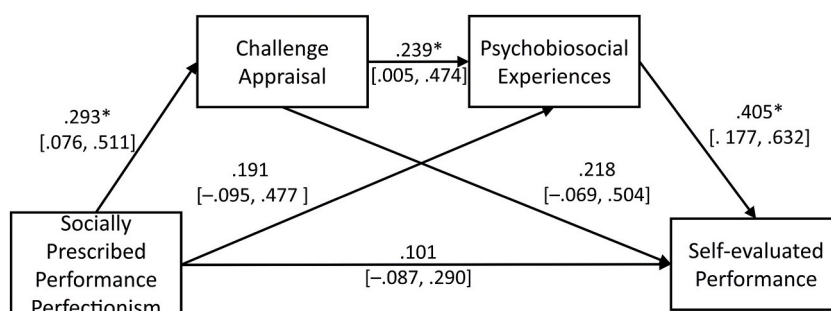*Note.* Standardized coefficients are reported, *p < .05 (95 % CI are in square brackets).

Table 2
Simultaneous multiple regression analyses of perfectionism, cognitive appraisals, and psychobiosocial experiences on self-evaluated performance.

Variables	β	t	p	Semipartial correlation
Self-evaluated performance				
$F(3, 63) = 9.313, p < .001, R^2 = .307$				
Self-oriented performance perfectionism	.096	0.876	.384	.092
Challenge appraisal	.225	2.022	.047	.212
Psychobiosocial experiences	.404	3.608	<.001	.378
Self-evaluated performance				
$F(3, 63) = 9.338, p < .001, R^2 = .308$				
Socially prescribed performance perfectionism	.101	.905	.369	.095
Challenge appraisal	.218	1.931	.058	.202
Psychobiosocial experiences	.404	3.616	<.001	.379

Note. β = standardized beta.

Fig. 2. Serial multiple mediation model depicting the relationship between Socially Prescribed Performance Perfectionism and Self-evaluated Performance, mediated by Challenge Appraisal and Psychobiosocial Experiences.
Note. Standardized coefficients are reported, *$p < .05$ (95 % CI are in square brackets).

[36]. As a result of this voluntary involvement, it is likely that they perceived this task more as a stimulating challenge, as an opportunity to test and master their skills and abilities in the field rather than as a stressful threat. This contention is supported by the higher scores on challenge appraisals compared to threat appraisals. Furthermore, the positive mean scores on psychobiosocial experiences indicate that the referees tend to perceive functional experiences while performing their duties. We suggest that these experiences contribute to their overall satisfaction and well-being in their refereeing role.

Regarding the theoretical framework, the findings support the tenets of the MuSt theory [9], which views performance as a dynamic and multidimensional process. This theory proposes interactions between personality traits (perfectionism in this study), cognitive appraisals of one's resources for managing task demands, and psychobiosocial experiences. The results indicate that self-oriented and socially prescribed perfectionism specific to the sport context, cognitive appraisals, and psychobiosocial experiences mutually influence each other in a serial sequence, leading to positive self-perceived performance.

Noteworthy, the results showed that a substantial portion of the variance in self-evaluated performance can be attributed to the studied variables (approximately 30 % in both mediation analyses), suggesting they have a meaningful impact on performance. The findings have practical implications that referee associations can use in referee training and development programs (e.g. Ref. [37]). It should be recognized that both self-oriented and socially prescribed forms of performance perfectionism may have positive effects on referee performance. This may occur when the self-imposed pressure for perfection outweighs the perception of external criticism, and both motivate referees to engage more actively in the task and to view the situation as an opportunity to test and express their abilities and skills. Rather than focusing only on reducing concerns of excessive perfectionism, for example by mindfully accepting external pressure, distancing oneself from external influences, refocusing on one's own performance, more emphasis could be placed on embracing positive aspects, such as the drive to learn, improve, and effectively apply self-regulation strategies to deal with the pressure from high performance demands and expectations.

4.1. Conclusion

Our study contributes to the literature on the relationship between perfectionism and emotion-related experiences by extending a previous study [18] also designed within MuSt theory. Specifically, the former study explored the relationships between perfectionism dimensions, cognitive appraisals, and psychobiosocial experiences. The current investigation included the relationship with perceived performance, a variable not considered in the earlier study, in a different population.

In line with Ruiz et al. [18], our findings support the positive associations between self-oriented perfectionism, challenge appraisals, and functional experiences. This consistent pattern suggests robust relationships between these variables across both studies. However, the present study diverged from the prior research in that no significant links were detected between socially prescribed

perfectionism, threat appraisals, and psychobiosocial experiences.

The inclusion of perceived performance in our study sheds light on how perfectionism dimensions relate to self-evaluated performance. Findings suggest that both self-oriented and socially prescribed perfectionism have the potential to positively influence perceived performance through challenge appraisals and functional experiences. These results broaden the scope of previous research and offer insights with theoretical and practical relevance in the context of soccer refereeing.

In conclusion, the current study adds to the growing body of research on perfectionism in sport. It contradicts the view that perfectionism is entirely maladaptive and highlights the importance of considering the context in which the effects of different perfectionism dimensions manifest themselves. The overall findings suggest that both self-oriented and socially prescribed perfectionism can impact referees' perceived performance in a similar way, with a positive association with challenge appraisals and functional psychobiosocial experiences.

4.2. Limitations and future directions

Despite the novel contribution to the literature, the study has some limitations. First, data were collected through self-report measures, which may introduce response biases. Future research could incorporate objective performance measures or observer ratings beyond self-evaluated performance. Second, sample size was relatively small and unbalanced by gender. A larger and more balanced sample could enhance the generalizability of the findings. Third, study findings may not be generalizable to professional referees because the participants were non-professional referees, who are likely to be driven by different motives (e.g., financial rewards), and may have less experience and expertise. Fourth, the study used a cross-sectional design, which limits the ability to establish causal relationships. Longitudinal designs would provide more robust evidence of the causal sequence linking perfectionism, cognitive appraisals, psychobiosocial experiences, and performance. They could also provide insights into how these variables might change throughout several games. Future research should also extend to officials from other sports and consider individual factors, for example level of experience and other personality traits (e.g., passion [38]), as well as contextual factors, such as the level of competition and match conditions, to further our understanding of how perfectionism and other variables affect officiating performance in different situations and sporting contexts.

Data availability statement

Data are not shared publicly to ensure confidentiality. Anonymized data will be made available upon request.

CRediT authorship contribution statement

Claudio Robazza: Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Pietro Sivilli:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Conceptualization. **Laura Bortoli:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Data curation, Conceptualization. **Montse C. Ruiz:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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