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ORIGINAL ARTICLE

Pre-competition emotions, self-confidence, and positional differences in top-level volleyball players: a pilot study

Marta A. Witkowska

Institute of Psychology, University of Gdansk, Gdansk, Poland

BACKGROUND
Pre-competition emotions and athletes' confidence are key psychological factors for performance. In this pilot study, building on reversal theory, the CSAI-2R/2D (cognitive and somatic anxiety intensity and directional appraisal) framework, and Vealey's sport-confidence model, we examined associations between trait sport-confidence and precompetition emotions, and assessed positional differences across elite volleyball roles.

PARTICIPANTS AND PROCEDURE
Seventy-nine elite male players from Poland completed the Trait Sport-Confidence Inventory (TSCI-PL) and CSAI-2D measures. Primary analyses used GLM/ANCOVA with Position (offensive, defensive, setters, middle blockers) as a fixed factor and age, playing experience, and contract length as covariates. The analytic sample for GLM/ANCOVA was $N = 78$.

RESULTS
Trait sport confidence correlated negatively with cognitive anxiety intensity and positively with the directional appraisal of both anxiety components. In covariateadjusted models, Position was associated with cognitive and somatic anxiety appraisals and with TSCI-PL, while the effect on cognitive anxiety intensity did not reach statistical significance ($p = .057$). These results indicate that athletes with higher trait confidence tend to interpret pre-competition symptoms more facilitatively.

CONCLUSIONS
The findings point to the relevance of directional appraisal and its linkage with confidence. Within this sample, middle blockers showed relatively more facilitative appraisals in adjusted analyses; however, several estimates were small-to-moderate and some were not significant, warranting cautious interpretation. The results suggest position-related differences in appraisal that require replication in larger samples and studies including objective performance indicators.

KEY WORDS
sport-confidence; pre-competition emotions; cognitive anxiety; appraisal; volleyball; positional differences; elite sport

CORRESPONDING AUTHOR – Marta A. Witkowska, Ph.D., Institute of Psychology, University of Gdansk, 3 Marii Janion Str., 80-309 Gdansk, Poland, e-mail: marta.witkowska@ug.edu.pl

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BACKGROUND

Emotions are central to performance. They are complex mental states shaped by neurophysiological change affecting thought, feeling, and behaviour (Frijda, 1986). Athletes face stressors from daily life and competition; coping depends on environmental and dispositional factors (Bojkowski, 2014). State orientation relates to rumination, undermining action-readiness under pressure (Kröhler & Berti, 2019). Pre-start activity (e.g., warm-up, travel) elevates arousal as a natural psychophysiological activation (Gould & Krane, 1992).

Traditionally, arousal was treated mainly as intensity: low may reflect relaxation or disengagement, while high may reflect excitement, anxiety, or anger. Yet intensity alone is insufficient. Reversal theory (RT) stresses directional appraisal – whether symptoms are read as facilitative or debilitative (Apter, in: Borek-Chudek, 2019). Positively appraised, high-intensity states can mobilize attention, speed, decisiveness, and sport confidence (Hanton & Jones, 1999). Negatively appraised, they yield debilitative pre-competition anxiety and performance disruption (Jones & Swain, 1995; Borek-Chudek, 2019).

A related construct, fear of failure, includes worrying cognitions and avoidance of situations that may elicit shame after loss (Bartels & Magun-Jackson, 2009; Łuszczyńska, 2014). In the sport-anxiety tradition, competitive state anxiety (CSA) reflects situational negative emotion arising from subjective appraisal of stressors and demands (Baldock et al., 2020; Martens et al., 1990). Classic models distinguish trait versus state anxiety (Spielberger, 1966, in: Borek-Chudek, 2019): higher trait anxiety increases threat perception and state anxiety, hindering optimal skill use. Within the CSAI-2R/2D framework, competitive anxiety comprises cognitive (e.g., worry, fear of failure) and somatic components and separates intensity from direction – whether symptoms are interpreted as helping or hindering performance (Baldock et al., 2020; Borek-Chudek, 2019; Martens et al., 1990).

In parallel, Vealey's (1986) sport-confidence (SC) model distinguishes trait SC, state SC, and competitive orientation. Trait SC reflects relatively stable beliefs about capacity to succeed; state SC varies with context. Team sports such as volleyball are well suited to study the interplay of confidence, emotion, and performance. Volleyball's pace, scoring dynamics, and interdependence elicit strong emotions (Mroczkowska & Supiński, 2018) and demand advanced attentional control, spatial orientation, visuomotor coordination, and emotion regulation (Makurat, 2007). Supportive teams may reduce decision-related anxiety, yet positional roles differ in responsibility and agency.

THEORETICAL RATIONALE

We draw on four strands. 1. RT predicts that performance depends on directional appraisal rather than intensity alone: athletes reading pre-start symptoms as facilitative should show higher SC and readiness. 2. CSAI-2R/2D separates cognitive versus somatic components and intensity versus direction, linking facilitative appraisal with more adaptive cognitions (e.g., confidence). 3. In Vealey's model, trait SC covaries with perceived control and positive expectations under pressure. 4. Positional ecology differs in decisional load and control: setters make frequent, high-impact, real-time decisions orchestrating offense, whereas others – e.g., middle blockers (MBs), outside/opposite hitters (OHs/Opp), and liberos/defensive OHs (Lib/Def-OHs) – are more contingent on setter distribution. Greater perceived agency/control and decision practice should relate to lower cognitive anxiety and more facilitative appraisal among setters relative to others. Together, these strands yield predictions about (a) links between anxiety intensity/appraisal and trait SC, and (b) positional differences reflecting decisional/agency demands.

VOLITIONAL PERSPECTIVE

Action control theory (ACT) posits that action- versus state-orientation shapes emotion regulation and intention enactment under pressure: action-oriented individuals downregulate negative affect and move efficiently from intention to execution; state-oriented individuals dwell in rumination and worry (Beckmann & Kazén, 1994; Kuhl, 1994). Consistently, state-oriented athletes show higher rumination, which hampers intention enactment under stress (Kröhler & Berti, 2019). The personality systems interaction (PSI) theory explains how affect gates access to and switching among cognitive systems (e.g., intention memory, intuitive control, threat monitoring), enabling rapid shifts between planning and acting under time pressure and uncertainty (Kuhl, 2000). In fast, interdependent sports like volleyball, these mechanisms offer a process account for why high-agency roles (e.g., setters) may show lower cognitive anxiety and more facilitative appraisal than more reactive roles. In the present study we did not assess action–state orientation or decision-making; references to volitional and decision-focused processes clarify the conceptual rationale and inform future hypotheses rather than imply measurement.

DIRECTIONAL HYPOTHESES

H1. Trait SC will correlate negatively with cognitive anxiety intensity.

H2. Trait SC will correlate negatively with somatic anxiety intensity.

H3. Trait SC will correlate positively with directional appraisal (facilitative versus debilitative) of both cognitive and somatic symptoms.

H4. (Positional differences – cognitive anxiety and appraisal). Given higher agency/control and decisional demands, setters will report lower pre-competition cognitive anxiety intensity and a more facilitative appraisal of cognitive symptoms than MB and offensive players (OHs/Opp); players more dependent on setter decisions (e.g., MB, OHs/Opp) are expected to show less adaptive profiles on these markers.

PARTICIPANTS AND PROCEDURE

PARTICIPANTS

Seventy-nine male professional volleyball players competing in Poland's PlusLiga and First League participated in the study. The sample represented over 30% of the available population of adult Polish players in the 2022/2023 season. Participation was voluntary and anonymous. Players completed questionnaires between March and May 2023. Participants were instructed to complete the questionnaires as close as possible to upcoming competitions (e.g., on the day of a match); however, due to the remote data collection procedure, the exact timing of questionnaire completion was not controlled.

For GLM/ANCOVA models, the analytic sample was $N = 78$ due to one case missing covariate data (age, playing experience, contract length). The mean age was 26.67 years ($SD = 5.54$).

Players were classified into four positional groups based on their primary role: setters, middle blockers, offensive players (opposite and outside hitters, OHs), defensive players (liberos and defensive outside hitters, OHs). Assignment was based on each athlete's primary competitive role during the investigated season, as reported by the club/coaching staff and the athlete. The 'defensive OH' label was used only when a player's role was predominantly reception/defence rather than attacking output.

Age, playing experience, and contract length were included as covariates in all GLM/ANCOVA models. Descriptive characteristics by position are shown in Table 1.

SAMPLE SIZE SENSITIVITY

Although not determined a priori, sensitivity analysis indicated that with $N = 78$ ($\alpha = .05$, $1-\beta = .80$), the study could detect effects of approximately $f \approx .38$ ($\eta^2 \approx .13$) for ANCOVA and $r \approx .31$ for correlations. Findings are therefore interpreted conservatively.

MEASURES

Measures used: sociodemographic survey (assessed age, playing experience, contract length, and professional status) and two standardized psychological methods validated in Polish athlete populations: the Trait Sport-Confidence Inventory (TSCI-PL) and the Scale for Examining Emotions in Sports Competition (CSAI-2RD).

The TSCI-PL (Gazdowska et al., 2019) is a 13-item measure assessing trait self-confidence in sport. Responses are summed and averaged to yield a total score. The tool demonstrates excellent internal consistency ($\alpha = .94$) and strong factorial validity.

The CSAI-2D (Borek-Chudek, 2019) subscale of the CSAI-2RD assesses cognitive anxiety intensity, somatic anxiety intensity, and directional appraisal (−2 = debilitative to +2 = facilitative). Each of the 14 items is rated for intensity (1-4) and direction (−2 to +2). Subscale scores = item mean × 10. The measure shows acceptable reliability ($\alpha = .69$-$.83$) and confirmed three-factor structure.

STATISTICAL ANALYSIS

Analyses were conducted in IBM SPSS Statistics 29. In this cross-sectional study, a general linear model (GLM/ANCOVA) was used to test the effect of Position (four levels) on TSCI-PL and CSAI-2D indices,

Table 1

Demographic characteristics of volleyball players by position (N = 79)

Position	*N*	Age *M* (*SD*)	Age range	Experience *M* (*SD*)	Experience range	Contract *M* (*SD*)	Contract range
Defensive	19	24.32 (5.30)	18-36	7.32 (4.76)	2-18	1.68 (1.00)	0-3
Middle blockers	20	28.55 (5.72)	19-37	11.35 (5.71)	3-20	1.55 (0.76)	0-3
Offensive	18	27.28 (4.51)	20-37	9.89 (5.09)	2-23	1.56 (0.62)	1-3
Setters	21	26.57 (5.46)	18-37	9.43 (4.99)	2-19	1.29 (0.78)	0-3

Note. Defensive players – liberos and defensive outside hitters; offensive players – outside and opposite hitters.

with age, playing experience, and contract length included as covariates. Adjusted estimated marginal means (EMMeans) with 95% CIs were used as the primary basis for interpretation, with Bonferroni-corrected pairwise comparisons reported.

Zero-order Pearson correlations were calculated for $N = 79$.

Assumptions (linearity, homogeneity of regression slopes, residual normality, homoscedasticity) were examined and found to be met. Collinearity diagnostics indicated severe overlap between age and playing experience (tolerance = 0.04 for both variables; variance inflation factor [VIF] = 25.14 and 25.16), whereas contract length showed minimal collinearity (tolerance = 0.78; VIF = 1.28); therefore, sensitivity analyses using reduced covariate models (age + contract; experience + contract) were conducted and produced the same positional pattern with VIF values less than 1.1 (available upon request). All three covariates were retained in the primary models to ensure comparability with prior research and to account for distinct aspects of player experience (chronological age, playing experience, and contract stability), despite their partial overlap.

RESULTS

Statistical analyses were conducted using a general linear model (GLM/ANCOVA) with Position (offensive players – outside and opposite hitters; defensive players – liberos/defensive OHs; setters; MBs) as a fixed factor and age, playing experience, and contract length as covariates. For each dependent variable (TSCI-PL trait sport-confidence; CSAI-2D cognitive anxiety intensity, somatic anxiety intensity, cognitive anxiety appraisal, and somatic anxiety appraisal), we report adjusted EMMeans (95% CIs), the main effect of Position (F, df, p), and partial η^2. Pairwise comparisons were Bonferroni-corrected. The analytic sample for GLM/ANCOVA was $N = 78$ (complete cases on covariates), whereas the correlation matrix used $N = 79$.

Following Neyman-Pearson principles, non-significant ANOVA tests for demographic variables were not interpreted as evidence of group equivalence; instead, all demographic indicators were retained as covariates. Assumptions of linearity, homogeneity of regression slopes, residual normality, and homoscedasticity were met.

Zero-order correlations ($N = 79$) are shown in Table 2. Trait sport-confidence correlated negatively with cognitive anxiety intensity ($r \approx -.33$, $p \leq .01$) and somatic anxiety intensity ($r \approx -.17$, not significant [n.s.]), and positively with cognitive anxiety appraisal ($r \approx .24$, $p \leq .05$) and somatic anxiety appraisal ($r \approx .27$, $p \leq .05$). These associations indicate that athletes higher in trait sport-confidence report lower pre-competition anxiety intensity and interpret their symptoms more facilitatively.

Omnibus tests for Position are presented in Table 3A. Position was significantly associated with cognitive anxiety appraisal, somatic anxiety appraisal, and trait sport-confidence. For cognitive anxiety intensity, the Position effect approached statistical significance ($p = .057$). No significant Position effects were found for somatic anxiety intensity or the CSAI-2D self-confidence component.

Adjusted EMMeans (95% CI) and key Bonferroni-corrected pairwise differences are presented in Table 3B. MBs showed the lowest adjusted cognitive anxiety intensity relative to offensive players and setters (non-significant in both comparisons). For cognitive anxiety appraisal, MBs demonstrated the most facilitative evaluations, differing significantly from offensive players, while the comparison with setters did not reach statistical significance. They also showed more facilitative somatic anxiety appraisal than offensive players and setters. MBs further displayed the highest adjusted TSCI-PL scores, with non-significant differences relative to setters and offensive players. Taken together, these adjusted results indicate a comparatively more adaptive pre-competition profile among MBs.

Because age and playing experience were highly collinear, sensitivity models using only age + contract

Table 2

Zero-order Pearson's r correlations among trait sport-confidence (TSCI-PL) and pre-competition emotional arousal (CSAI-2D) indices in volleyball players (N = 79)

	TSCI-PL	CSAI cognitive intensity	CSAI somatic intensity	CSAI cognitive appraisal (direction)
CSAI cognitive intensity	−.33**	–		
CSAI somatic intensity	−.17 (ns)	.83***	–	
CSAI cognitive appraisal (direction)	.24*	−.31**	−.35**	–
CSAI somatic appraisal (direction)	.26*	−.12 (ns)	−.20 (ns)	.87***

Note. $N = 79$ (complete cases); TSCI-PL – Trait Sport-Confidence Inventory; CSAI – Competitive State Anxiety Inventory. $^{*}p \leq .05$, $^{**}p \leq .01$, $^{***}p \leq .001$.

Table 3A

GLM/ANCOVA omnibus tests for Position

Outcome	$F(3, 71)$	p	partial η^2
Cognitive anxiety intensity (CSAI-2D)	2.62	.057	0.100
Somatic anxiety intensity (CSAI-2D)	1.74	.166	0.069
Self-confidence intensity (CSAI-2D)	1.50	.222	0.060
Cognitive anxiety appraisal (direction)	3.50	.020	0.129
Somatic anxiety appraisal (direction)	3.84	.013	0.140
Trait sport-confidence (TSCI-PL)	3.38	.023	0.125

Note. Analytic $N = 78$ (listwise deletion on covariates). Partial η^2 reported for Position. TSCI-PL – Trait Sport-Confidence Inventory; CSAI – Competitive State Anxiety Inventory.

Table 3B

Adjusted EMMeans (95% CI) for self-confidence, pre-competition emotional intensity, and anxiety appraisal in volleyball players by position

Outcome	Offensive	Defensive	Setters	Middle blockers
Cognitive anxiety intensity (higher = worse)	21.31 [18.09, 24.53]	18.02 [14.79, 21.25]	20.77 [17.77, 23.78]	15.89 [12.80, 18.98]
Cognitive anxiety appraisal (higher = more facilitative)	−12.71 [−16.77, −8.64]	−7.75 [−11.84, −3.67]	−11.46 [−15.26, −7.66]	−4.57 [−8.48, −0.66]
Somatic anxiety intensity (higher = worse)	17.39 [14.63, 20.15]	18.11 [15.34, 20.88]	19.63 [17.05, 22.21]	15.43 [12.78, 18.08]
Somatic anxiety appraisal (higher = more facilitative)	−9.69 [−13.83, −5.54]	−7.89 [−12.06, −3.72]	−8.66 [−12.54, −4.79]	−0.99 [−4.98, 3.00]
Trait sport-confidence (TSCI-PL)	5.94 [5.45, 6.44]	6.50 [6.00, 7.00]	5.93 [5.46, 6.39]	6.82 [6.34, 7.30]

Note. EMMeans (95% CI) adjusted for age, experience, and contract; analytic $N = 78$ (complete-case). Pairwise comparisons are Bonferroni-corrected. Key Bonferroni corrected pairwise differences (Δ = EMMeans difference): Cognitive anxiety appraisal: offensive vs. middle blockers: Δ = −8.14 [−13.76, −2.52], $p = .031$; setters vs. middle blockers: Δ = −6.89 [−12.36, −1.43], $p = .085$; Somatic anxiety appraisal: offensive vs. middle blockers: Δ = −8.69 [−14.43, −2.96], $p = .021$; setters vs. middle blockers: Δ = −7.67 [−13.25, −2.10], $p = .046$; Trait sport-confidence (TSCI-PL): setters vs. middle blockers: Δ = −0.89 [−1.56, −0.23], $p = .055$; offensive vs. middle blockers: Δ = −0.88 [−1.56, −0.20], $p = .075$.

or experience + contract were estimated. Collinearity diagnostics indicated substantial multicollinearity between age and playing experience (tolerance = 0.04 for both variables; VIF = 25.13 and 25.16), while contract length was not collinear with the remaining covariates (tolerance = 0.78; VIF = 1.28). Accordingly, we interpret covariate-adjusted positional effects primarily via adjusted EMMeans and confirm the stability of conclusions in reduced-covariate sensitivity models (age + contract; experience + contract). The overall conclusions were unchanged, and Position effects for cognitive-anxiety outcomes were slightly stronger in the reduced-covariate models (e.g., cognitive-anxiety intensity: $F(3, 72) \approx 2.74$, $p \approx .049$; cognitive-anxiety appraisal: $F(3, 72) \approx 3.56$, $p \approx .018$). The three-covariate models remain primary; sensitivity outputs are available on request.

DISCUSSION

Findings were aligned with the rationale. Personality-related differences have also been linked to athletes' anxiety responses, with evidence that Big Five traits predict both state and trait anxiety in athletic samples under conditions of heightened stress (Üngür & Karagözoğlu, 2021). In addition, ruminative tendencies may mediate links between personality dispositions and adverse stress reactions, highlighting rumination as a plausible process variable in sport contexts (Ogińska-Bulik et al., 2023). Furthermore, generalized self-efficacy and dimensions of perfectionism are significantly associated with anxiety and depression, suggesting that dispositional factors may play an important role in shaping athletes' emotional functioning (Kozłowska & Kuty-Pachecka, 2023). Consistent with H1-H3, trait sport-con-

fidence was negatively related to cognitive anxiety intensity, showed a small negative association with somatic anxiety intensity, and showed small positive associations with directional appraisal of both components. This accords with ACT accounts linking state orientation to rumination and worry-focused pre-start cognition (Kröhler & Berti, 2019) and with reversal-theory and CSAI-2R/2D views that appraisal shapes emotional responses (Baldock et al., 2020; Borek-Chudek, 2019; Martens et al., 1990).

Regarding H4, SET showed a more adaptive unadjusted profile (lower cognitive anxiety intensity; more facilitative appraisal). After adjusting for age, playing experience, and contract length, MBs exhibited the most facilitative appraisals and the lowest cognitive anxiety intensity (n.s.), with the highest adjusted trait sport-confidence (n.s.). SET retained advantages over OHs/Opp and were broadly comparable to defensive players on selected indices (Tables 3A, 3B). Thus, while unadjusted results favoured SET, the adjusted pattern indicates MBs were more adaptive on appraisal-focused markers central to CSAI-2D and reversal theory.

We made no a priori predictions about positional differences in trait sport-confidence; these findings are therefore exploratory. Higher trait sport-confidence co-occurred with lower cognitive/somatic anxiety and more facilitative symptom interpretations. In adjusted analyses, this advantage was most apparent among MB (n.s.), which may reflect role-related characteristics, as outlined in the theoretical rationale.

Role-based explanations also clarify SET results. However, the translation of "high agency" into pre-start advantages appears context-dependent: SET showed more facilitative appraisal than OHs/Opp, while MBs showed higher appraisal scores than both once covariates were controlled. This suggests that perceived control may vary across roles in ways outlined in the theoretical rationale.

The study partly supports the hypotheses: self-confidence related negatively to cognitive and somatic anxiety and positively to appraisal. This mirrors prior work on positively appraised pre-competition emotions (Hanton & Jones, 1999; Martens et al., 1990). Our adjusted positional results refine this picture: how role demands shape appraisal (more than anxiety magnitude per se) differentiates readiness across positions.

The observed associations between trait sport confidence and anxiety intensity/appraisal are consistent with appraisal-based accounts emphasizing that symptom interpretation (facilitative versus debilitative) is central to pre-start emotional functioning. While ACT and PSI theory offer potentially relevant process explanations (Kuhl, 1994, 2000) linking affect to action control (e.g., rumination versus action readiness), these volitional constructs were not measured in the present study. Accordingly, any references to ACT/PSI mechanisms should be treated as hypothesis generating rather than as explanations supported by the current data.

The pattern is consistent with a task-focused coping orientation (Endler & Parker typology), i.e., addressing challenges directly and reappraising pre-start anxiety as mobilizing (Bojkowski, 2014). Within this lens, post-adjustment SET advantages over OHs/Opp and overall MB superiority may reflect role-linked schemas: central decision routines for SET and highly scripted, time-compressed reads for MBs.

The moderate association between self-confidence and pre-competition emotional intensity warrants further study and suggests additional factors at play. Future work should consider broader demographics (international versus national experience, starter versus reserve, court role). Contractual security may moderate confidence (Swainston et al., 2021). Crucially, future designs should treat "positional agency" as ecology-dependent (team systems; informational load), test whether facilitative appraisal mediates positional effects, and examine whether volitional orientation moderates benefits of decision-focused training – approaches with meta-analytic support in volleyball (Conejero Suárez et al., 2020).

With respect to positional differences, unadjusted data showed lower cognitive anxiety intensity and more facilitative appraisal for SET versus MB and OHs/Opp. These patterns may relate to differences in role responsibilities and perceived control; however, this interpretation remains speculative given the lack of direct measures. Our adjusted results suggest that these patterns may reflect role-related differences, as outlined in the theoretical rationale; however, this interpretation remains speculative.

An alternative account for positional patterns relates to selection and development processes, including early specialization and role assignment based on physical and technical characteristics (Coutinho et al., 2015; Tsoukos et al., 2019). These factors may influence how psychological profiles develop across positions; however, this interpretation requires longitudinal verification. The findings support the potential relevance of psychological skills training in volleyball, particularly approaches focusing on appraisal and perceived control. These implications remain conceptual and require verification using designs with direct measures.

Future studies should directly assess (a) action–state orientation using ACT instruments and PSI-based volitional indicators, plus sport-specific rumination (Kröhler & Berti, 2019), and (b) decision-making with validated paradigms (e.g., in-situ choice tasks, video-occlusion). Pre-registered, adequately powered designs can then test whether positional differences in cognitive-anxiety intensity and appraisal are mediated by volitional variables and whether action–state orientation moderates the ben-

efits of decision-focused training (e.g., disproportionate gains for state-oriented athletes). Parallel work should model role ecology – serve-receive structures, blocking schemes, setter–MB tempo – to quantify how information structure shapes appraisal and confidence across positions.

CONCLUSIONS

The present findings highlight the central role of directional appraisal in shaping pre-competition emotions, consistent with reversal-theory accounts that emphasize the facilitative or debilitative interpretation of arousal (Apter, in: Borek-Chudek, 2019). Trait sport-confidence was closely linked with more adaptive appraisals of cognitive and somatic symptoms, in line with prior work on the relationship between confidence and emotion regulation (Hanton & Jones, 1999; Martens et al., 1990).

In this sample, covariate-adjusted analyses suggested that MBs showed relatively more facilitative cognitive and somatic appraisal patterns, while the effect on cognitive-anxiety intensity did not reach the level of significance. Because no objective performance outcomes were included, we avoid labelling any positional profile as globally "most adaptive"; rather, the present data indicate position-related differences in appraisal that warrant replication in larger samples and designs incorporating performance indicators. The lower cognitive-anxiety intensity and higher adjusted sport-confidence scores (although not significant) observed among MBs may be consistent with descriptions of their highly scripted, cue-driven role structure in the literature (Millán-Sánchez et al., 2019). However, as these role characteristics were not directly assessed in the present study, this interpretation should be treated as speculative. Collinearity diagnostics indicated severe overlap between age and playing experience (tolerance = 0.04; VIF ≈ 25 for both), whereas contract length showed minimal collinearity (VIF ≈ 1.28). Therefore, we do not interpret individual covariate coefficients due to the observed multicollinearity; instead, we primarily emphasize covariate-adjusted Position effects via adjusted EM-Means and corroborate conclusions with reduced-covariate sensitivity models.

These results refine assumptions about agency in volleyball. They suggest that adaptive emotional patterns may be related to positional task characteristics described in the literature, including predictability, temporal compression, and cue richness (Mroczkowska & Supiński, 2018). In positions where informational load is high but direct influence over play is limited – especially among offensive players – psychological interventions targeting appraisal training, cue utilisation, and perceived control may be particularly impactful (Conejero Suárez et al., 2020).

Overall, this study highlights the importance of considering positional ecology, not only physical or technical demands, when analysing pre-competition emotions in team sports.

FUTURE DIRECTIONS

The present findings highlight the importance of directional appraisal in pre-competition emotions and its linkage with trait sport confidence. At the same time, several explanatory frameworks discussed in this study – particularly volitional accounts (ACT/PSI) and decision-making processes – were not directly measured and should therefore be treated as hypothesis-generating.

Future studies should directly assess 1) volitional orientation (e.g., action–state orientation and sport-specific rumination) and 2) decision-making using validated sport-specific paradigms (e.g., in situ choice tasks or video-based occlusion methods). Such designs would allow testing whether positional differences in anxiety appraisal are mediated by perceived control, volitional tendencies, and decision-related demands.

To strengthen inference, longitudinal and repeated-measurement approaches are recommended (e.g., across multiple matches and competitive phases), enabling examination of temporal ordering between confidence and emotional dynamics. Intervention studies could further evaluate whether training components targeting appraisal, perceived control, or decision processes are associated with changes in pre-competition emotional patterns, without implying causal conclusions.

Finally, future work should incorporate objective performance indicators to contextualize what constitutes "adaptive" profiles in elite volleyball, along with preregistered designs and larger, multi-team samples to improve precision. Given difficulties with the TSCI-PL instruction anchor in some participants, additional attention to measurement clarity or alternative confidence measures may strengthen construct validity.

LIMITATIONS

This study has several limitations.

1. Remote data collection and snowball sampling limited control over player characteristics (team context, league). Moreover, due to the remote administration, the exact timing of questionnaire completion relative to competition could not be verified, which may have introduced additional variability in reported pre-competition states.
2. Decision-making, cue utilisation, and action–state orientation were not measured; inferences about

volitional mechanisms and decision-focused training are conceptual.
3. Collinearity between age and playing experience may have affected the precision of covariate-adjusted estimates, although sensitivity analyses using reduced covariate sets yielded comparable results.
4. Listwise deletion excluded one participant and assumes that data were missing completely at random (MCAR).
5. Some athletes (n = 5) reported difficulty with the TSCI-PL instruction to compare themselves to "the most confident athlete they know." This ambiguity may introduce additional measurement noise and could attenuate associations with emotional indices. Future work may consider providing a brief clarification/example during administration or using an alternative trait confidence measure with less idiosyncratic reference anchors.
6. Grouping by primary season role did not capture situational responsibilities (starter versus reserve, phase-specific tasks).
7. Developmental histories (early specialisation, prior mental-skills training) were not modelled. Future work should integrate these contextual and developmental factors and include direct measures of volitional and decision-making processes.

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