

EFFECTS OF COMPETITION ANXIETY ON SELF-CONFIDENCE IN SOCCER PLAYERS: MODULATION EFFECTS OF HOME AND AWAY GAMES

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ABSTRACT

Background and Objective

This study aims to verify the modulating effects of home and away games based on the relationships between competition anxiety and confidence of soccer players and provide basic data for improving the performance of soccer players.

Material and Methods

A survey was conducted with 336 professional soccer players from the Seoul, Gyeonggi, and Busan areas who were registered with the Korea Football Association as of 2016. In addition, for all data collected, multigroup structural equation modeling analysis and pairwise parameter comparison analysis were conducted.

Results

The results of the analyses indicated competition anxiety had a significantly greater effect on self-confidence in the away group than in the home group (home: -9.7% ; away: -55.7%). Pairwise parameter comparisons showed $Z = 2.532$ was greater than the rejection criteria ($\pm 1.96: \alpha = 0.05$; $\pm 2.58: \alpha = 0.01$), with a significant modulation effect at the 95% confidence level.

Conclusion

These results indicated that effective reduction in anxiety would improve players' confidence and thereby improve their performance in away games.

Key words: *Competition anxiety, Confidence, Home and away games, Home advantage, Soccer players*

Competition anxiety is one of several psychological factors that influence the outcome of a sporting event. This concept was developed by applying theories on anxiety to sports situations and includes a conscious response, such as tension or stress in players arising from

the need to achieve favourable results in a competition, and cognitive, physical anxiety states because of recognizing a situation as a threat. In addition, confidence is a key factor activating human behaviours; it is an essential psychological factor that players require for

favourable performance in sports,¹ and for developing the belief that they can successfully perform well in the game based on their individual skills.^{2,3}

Confidence and anxiety are factors applied in many psychological tests but are known to be counteractive. In addition, increased competition anxiety in players in competitive sports reportedly decreases sport confidence and game performance.³⁻⁶ Confidence plays a role in alleviating cognitive anxiety and physiological anxiety by relieving the uncertainties and helps maximize performances.^{7,8}

The home and away game scheme refers to game execution whereby a team invites the opponent team to play a game on its home ground and subsequently goes to the opponent team's home ground to play a game. Most of the renowned professional sports leagues adopt the home and away game scheme. In almost all sports, home teams, owing to various advantages such as faith of a home crowd, familiarity with the place, and favourable comments on progress, reportedly show better results than away teams, who experience burdens caused by travelling, negative psychological and physical states, and a critical state of actions. The winning rate in home games is reported to be approximately 75.6% higher than in away games.⁹⁻¹¹ However, despite partly proven home advantages in sporting events, it is difficult to accurately explain the reason underlying better performance. Therefore, the modulation effects of the home and away game scheme on the relationships between psychological factors need to be empirically investigated.

The home and away game scheme is believed to influence the relationships between competitive state anxiety and sports confidence through changes in environmental factors. Therefore, this study evaluated the effects of the home and away games on the relationship between competition anxiety and confidence of soccer players, thereby providing useful information for improving performances of players. We included professional soccer league players as soccer is the largest professional sport.

METHODS

Study Participants

The participants were 342 professional soccer players from Seoul, Gyeonggi, and Busan areas, who

are registered with the Korea Football Association as of 2016. A survey was conducted by selecting the 342 players using non-probability sampling. Six players who gave inaccurate or no responses were excluded, and the data of 336 players (166 players in the home teams and 170 players in the away team; 177 players in the first-level group, 159 players in the second-level group) were finally included in the study.

Research Procedures

Approval was obtained from the appropriate research ethics committee prior to the study. The authors contacted the leader and manager of each professional team by phone and explained the purpose and intent of the study to obtain consent for data collection before conducting the study. Subsequently, 1-1.5 hours before the start of the match, the researcher and 1 assistant researcher visited each competition venue personally and collected the data separately for the home and away teams. The researchers explained the purpose and intent of the study to the players and obtained signed informed consent forms at each competition venue prior to data collection. Self-administered questionnaires were given to the players, and completed questionnaires were collected from the venues.

Research Tool

Competition Anxiety

To assess competition anxiety, we used the Competitive State Anxiety Inventory-2 (CSAI-2), developed by Martens et al.¹² the CSAI-2 questionnaire was modified to complement the study purpose. The original CSAI-2 questionnaire consists of a total of 27 items, including 9 items of cognitive anxiety, 9 of physical anxiety, and 9 of state confidence; however, in an expert meeting (1 sports psychology professor, 2 sports psychology doctorate holders) to verify the questionnaire content validity, the items on confidence state were deleted since they were inappropriate for explaining the relationships between competitive state anxiety and confidence, because these factors were similar to sports confidence items contained in the study model. Consequently, the questionnaire included 18 items (9 items of cognitive anxiety and 9 of physical anxiety). Each item was measured using the 5-point Likert scale (very much so = 5; very less so = 1).

A confirmatory factor analysis was used to verify the validity and reliability of the competition anxiety questionnaire. With a factor loading of 1, 7 items of the cognitive state anxiety and 10 and 16 items of the physical state anxiety were <0.5 ; therefore, the items were sequentially deleted. The results showed the goodness-of-fit of the measurement model consisting of 14 items of the final 2 sub-factors as $\chi^2=238.306$, degree of freedom (df) = 76, $p<0.001$, Tucker-Lewis index (TLI) = 0.918, comparative fit index (CFI) = 0.932, root mean square error of approximation (RMSEA) = 0.080, and root mean square residual (RMR) = 0.050; the goodness-of-fit was satisfied on excluding the χ^2 test index.

In addition, standardized path coefficients of the measured items illustrating the individual latent variables were > 0.5 , showing significant path coefficients, with cognitive anxiety = 0.595-0.793, physical anxiety = 0.619-0.757, which explain the latent variables well. Average variance extracted (AVE) (cognitive anxiety = 0.509, state anxiety = 0.502), construct reliability (cognitive anxiety = 0.878, state anxiety = 0.875), and Cronbach's α (cognitive anxiety = 0.890, state anxiety = 0.871) values satisfied the criteria, assuring validity and reliability.

Sports Confidence

For the sports confidence questionnaire, the sports confidence test sheets adapted for Korean players by Jang and Cho were used after they were modified to suit the study purposes.² The original sports confidence questionnaire consists 24 items, including 6 persistence items, 6 calm items, 6 hesitation items, 6 physical prime items; however, at an expert meeting (1 sports psychology professor, 2 sports psychology doctorate holders) for verifying questionnaire content validity, among the calm factors, the item "I play the game only with the actions that I should do." was deleted because it was inappropriate for soccer players; among the physical prime factors, the item "I had a good weight management." was deleted because soccer is not a weight-class sport and is not highly sensitive to weight changes. Consequently, the questionnaire included 22 items (6 persistence items, 5 calm items, 6 hesitation items, and 5 physical prime items), each measured using 5-point Likert scale (very much so = 5, very less so = 1).

A confirmatory factor analysis was conducted to verify the validity and reliability of the sports confidence test sheet. The load factors of 2, 5, 7, 12, 14, and 19 items were <0.5 in the initial factor analysis, which were hence deleted using a one-by-one repetitive deletion process. The results showed that the goodness-of-fit index of the measurement model was $\chi^2=236.119$, df = 98, $p<0.001$, TLI = 0.931, CFI = 0.943, RMSEA = 0.065, and RMR = 0.037, satisfying the goodness-of-fit criteria, excluding the χ^2 test index.

In addition, standardized path coefficients of the measured items illustrating the individual latent variables were >0.5 , showing significant path coefficients, with persistence = 0.736-0.833, hesitation = 0.703-0.877, calm = 0.543-0.744, physical prime = 0.647-0.760, which explain the latent variables well. AVE (persistence = 0.716, hesitation = 0.649, calm = 0.513, physical prime = 0.583), construct reliability (persistence = 0.910, hesitation = 0.880, calm = 0.806, physical prime = 0.848), and Cronbach's α (persistence = 0.865, hesitation = 0.877, calm = 0.717, physical prime = 0.794) values satisfied the criteria, assuring validity and reliability.

Data Processing Methods

For all data collected, frequency analysis, confirmatory factor analysis, reliability analysis (AVE, construct reliability, Cronbach's α), correlation analysis, structural equation modeling (SEM) analysis, measurement equivalence verification, multigroup SEM analysis, and pairwise parameter comparison analysis were conducted using IBM SPSS and SPSS Amos (version 21.0) programs (IBM Corp., Armonk, NY, USA).

RESULTS

Descriptive Statistics of Sub-Factors and Results of Correlation Analysis

Prior to the SEM analysis, descriptive statistics analysis and correlation analysis of subfactors were conducted. The results are shown in Table 1. The analysis indicated that mean, standard deviation, skewness, and kurtosis of each subfactor satisfied (is greater than) the criteria. In addition, on correlation analysis, significant positive correlations were seen among cognitive anxiety, physical anxiety, and hesitation factors (0.457-0.680) and among persistence,

calm, and physical prime factors (0.478-0.528). However, negative correlations were seen among cognitive anxiety, physical anxiety, hesitation factors and persistence, calm, physical prime factors (-0.170 to -0.486). Thus, positive correlations were seen among variables theoretically expected to have a positive correlation; however, negative correlations were seen among some variables that were theoretically expected to have a positive correlation.

Modulation Effects of the Home and Away Scheme

Verification of Measurement Equivalence

Measurement equivalence was verified before verifying modulation effects of the home and away scheme. To verify the measurement equivalence, 2 step equivalence verification was conducted; step 1 was to verify configural invariance, which included verifying that the model and path of the confirmatory factor analysis of competition anxiety and sports confidence are the same between home and away team groups, and step 2 was to verify the factor coefficient equivalence (factor loading equivalence or Metric identity) by testing the measurement paths of the factor coefficients of the observation variables constituting the latent variables.

The analysis results for configural invariance indicated that the model fit was good for both home and away teams for both competition anxiety and sports confidence (Table 2). In addition, the factor loading of the 2 groups on the test sheets satisfied the criteria of >0.5 in both competition anxiety

(home = 0.609-0.864, away = 0.503-0.786) and sports confidence (home = 0.528-0.913, away = 0.516-0.832), indicating no difference between groups in configural invariance.

After verification of the configural invariance, factor loading equivalence verification was conducted between the 2 groups. For factor loading equivalence verification, the configural invariance was selected as the base mode and the model analysis was conducted by imposing λ constraints when χ^2 test was utilized for the analysis, because the constraint-imposed model was implicit in the base model. As shown in Table 2, both competition anxiety and sports confidence showed no significant difference between the 2 groups at the level of 0.05 (when $df = 12$ and χ^2 rejection criteria = 21) from the χ^2 difference test between the configural invariance model and λ constraint model, indicating that both groups are equal.

Verification of Modulation Effects

Measurement identity was verified between home and away groups. The modulation effect verification was subsequently conducted using the SEM analysis. The analysis results indicated that competition anxiety had a negative explanatory power of 9.7% for sports confidence in the home group and competition anxiety had a negative explanatory power of 55.7% for sports confidence in the away group (home $\beta = -0.311$, $R^2 = -0.097$, $p < 0.001$; away $\beta = -0.746$, $R^2 = -0.557$, $p < 0.001$), as shown in Table 3. Similarly,

TABLE 1 Results of Descriptive Statistics Analysis and Correlation Analysis of Subfactors

	Mean	Standard deviation	Skewness	Kurtosis	A	B	C	D	E	F
A	3.02	0.83	-0.459	-0.089	1.000					
B	2.62	0.74	-0.160	-0.492	0.680**	1.000				
C	3.93	0.68	-0.001	-0.632	-0.170**	-0.224**	1.000			
D	2.51	0.86	0.162	-0.415	0.457**	0.483**	-0.484**	1.000		
E	3.22	0.61	0.317	0.780	-0.364**	-0.329**	0.502**	-0.486**	1.000	
F	3.49	0.66	0.243	-0.027	-0.265**	-0.271**	0.478**	-0.397**	0.528**	1.000

** $p < 0.01$

A = cognitive anxiety; B = physical anxiety; C = persistence; D = hesitation; E = calm, F = physical prime.

competition anxiety had significant negative impact on sports confidence in the 2 groups; however, the pairwise parameter comparison yielded a Z value of 2.532, exceeding the rejection criteria (± 1.96 : $\alpha=0.05$; ± 2.58 : $\alpha=0.01$), showing a significant difference at the 95% confidence level. The results suggested a modulation effect in the relationship between competition anxiety and sports confidence between home and away games.

DISCUSSION

This study indicated that competition anxiety has a significant negative influence on confidence in players. In the pairwise parameter comparison on the path coefficients between the 2 groups, the path coefficient of the away group was significantly greater than that of the home group, indicating a modulation effect between the 2 groups.

Our results are in line with those of Hollenbeck and Hall and Koivula et al.,^{13,14} that if players feel greater anxiety and think negatively before a game, the corresponding reduction in the sports confidence and concentration would more negatively affect the game performance. These results corroborate the results of Balmer et al. that home team players would be experience less anxiety and stress and more positive psychological states before the game,⁹ whereas away team players would experience greater anxiety and more negative psychological states, which lead to decreased confidence; in addition, our results were consistent with those of Carron et al.,¹⁵ who showed that environmental factors such as the match day weather, the stadium condition, or mistakes by the referee, owing to the nature of competitive sports

TABLE 2 Verification of Measurement Identity

Competition anxiety	χ^2	df	CFI	TLI	RMSEA	$\Delta\chi^2$	Δdf
Model 1. Configural invariance	348.360	58	0.920	0.904	0.062	-19.954	12
Model 2. λ equivalence	368.314	46	0.916	0.907	0.061		
Sports confidence	χ^2	df	CFI	TLI	RMSEA	$\Delta\chi^2$	Δdf
Model 1. Configural invariance	392.171	196	0.922	0.905	0.055	-5.962	12
Model 2. λ equivalence	198.133	208	0.925	0.913	0.052		

CFI = comparative fit index; df = degrees of freedom; RMSEA = root mean square error of approximation; TLI = Tucker-Lewis index.

TABLE 3 Results of Modulation Effect Verification

Path			Home	Away	Pairwise parameter difference Z
			β	β	
Competition anxiety	→	Confidence	-0.311*	-0.746*	2.532

* $p < 0.05$.
Rejection criteria of pairwise parameter difference ± 1.96 ($\alpha = 0.05$), ± 2.58 ($\alpha = 0.01$).

situations, decreased the confidence of players by increasing stress and anxiety.

Collectively, it can be inferred that even players would experience competition anxiety; however, decrease in confidence would be less among home players because of the familiarity with place, comfort, and crowd support. In addition, Andrews and Wilding proposed that anxiety symptoms arising from initial anxiety would result in greater anxiety through anxiety feedback loops; hence, anxiety among players needs to effectively managed, which otherwise would decrease the self-confidence of players.¹⁶

Therefore, leaders should provide careful guidance and make efforts toward mitigating the decrease in confidence caused by anxiety in away games. In addition, there is a need for guiding players to self-management by developing and using effective and systematic psychological skills using various techniques. These efforts would lead to positive match outcomes by minimizing the loss of match performances of players even in away games.

This study has limitations. Only Korean professional soccer players were included, and only competition anxiety and sports confidence were selected among several psychological factors to verify the modulation effects of the home and away game. Future studies should include more psychological variables. Studies comparing Korean players with those of other nationalities and experienced and non-experienced players are needed. Such studies would provide objective information, which will help improve the performance of soccer players.

CONCLUSION

A modulation effect of the home and away game scheme on competition anxiety was seen in soccer players, which in turn affects their sports confidence. These results indicated that effective management of stress in players in away games would improve their confidence and thereby improving their performances. The results also emphasize on the need for the development and application of effective and systematic methods to eliminate or control the factors causing anxiety in competing players.

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