The Influence of Game Location on Athletes' Psychological States

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The purpose of the study was to investigate the relationship between game location and precompetition psychological states. Male rugby players (N = 100) completed the Competitive State Anxiety Inventory-2 and the Profile of Mood States approximately 1 hr before a home and an away game. Repeated measures multivariate analysis of variance of mood and anxiety scores indicated significant differences between home and away locations. Participants scored higher on Vigor and Self-confidence, and lower on Tension, Depression, Anger, Fatigue, Confusion, Cognitive Anxiety, and Somatic Anxiety when competing at home. The findings support the proposal (Courneya & Carron, 1992) that psychological states are influenced by game location.

Territoriality represents a perception of proprietary rights over a physical space. Research in the sport sciences which has investigated the issue of territoriality generally has focused on the what and why of the home advantage. The home advantage refers to "the consistent finding that home teams in sport competitions win over 50% of the games played under a balanced home and away schedule" (Courneya & Carron, 1992, p. 13). Research provides support for the conclusion that a home advantage is present in all major team sports, is identical in magnitude from the college to the professional level, and has been in evidence for at least the past one hundred years. In the most heavily researched sports, the magnitude of the home advantage varies from 53.5% (baseball) to 57.3% (American football), 61.1% (ice hockey), 64.4% (basketball), and 64.5% (soccer) (see Courneya & Carron, 1992).

Given that the home advantage has been shown to be generalizable across major team sports, stable over time, and robust and replicable in studies focusing on the same sport, it now seems timely to begin to identify its underlying mechanisms. To facilitate this process, Courneya and Carron advanced a conceptual model of the home advantage phenomenon. In their model, the game location-performance outcome relationship is assumed to be influenced by three components: game location factors, critical psychological states, and critical behavioral states. The four game location factors assumed to have an impact on performance outcome are the crowd, travel, familiarity with the competition facility, and rules. In turn, these four game location factors are assumed to have an impact on important cognitive and/or affective states, and, consequently, on behavior among the three principal groups directly associated with the outcome—athletes, coaches and officials.

Research intended to identify factors that contribute to the home advantage has largely focused on the game location factors. For example, various investigations have examined (a) the nature of the crowd, including its size and density (Agnew & Carron, 1994; Dowie, 1982; Pollard, 1986; Schwartz & Barsky, 1977) and behavior (Greer, 1983; Thirer & Rampey, 1979); (b) travel factors, including absolute distance traveled (Pollard, 1986; Snyder & Purdy, 1985) as well as the nature of the travel including the duration of the road trip, the duration of the home stand, and the number of time zones crossed (Courneya & Carron, 1991; Pace & Carron, 1992); (c) rules that might favor the home team (e.g., batting last in baseball; Courneya & Carron, 1990); and, (d) familiarity factors, including the size of the playing field (Pollard, 1986), the nature of the playing surface (Pollard, 1986) and familiarity with the venue (Moore & Brylinsky, 1995). In general, this research has shown that, at best, travel factors, rule factors and familiarity factors play only a minimal role in explaining the variance in the home advantage. Further, while the crowd has been shown to be associated with the home advantage—specifically, its supportiveness and density but not its absolute size—the absence of spectators does not negate the superior performance of home teams (McCutcheon, 1984; Moore & Brylinsky, 1993).

Given that questions associated with the what of the home advantage appear to be reliably answered (i.e., whether an advantage exists and its extent), the most interesting and perplexing unanswered question is why (i.e., what are the underlying mechanisms?). In order to gain insight into this question, it seems probable that greater attention must be paid to the impact of game location on the psychological states and behaviors of coaches, athletes, and officials. Both Bray and Widmeyer (1995) and Jurkovec (1985) attempted to investigate the psychological states of competitors. Bray and Widmeyer assessed the perceptions of women basketball players concerning the home advantage. The athletes felt that playing at home offered them an advantage. The principal reasons for this advantage were considered to be familiarity with the surroundings, support of fans, lack of travel, and enhanced team confidence.

Using a similar approach, Jurkovec (1985) asked athletes to recall different psychological states experienced prior to and during home and away games. Of the 74 basketball players surveyed, 47% felt their personal statistics were better during home games, 76% indicated they were more confident, and 89% reported being motivated by home banners and signs of support. When follow-up interviews were conducted with a subsample (n = 14) of the players, the consensus was that playing at home is advantageous but it does create pressures to win while at the same time contributing to greater confidence because of the presence of crowd support.

Although both the Bray and Widmeyer and Jurkovec studies do provide some insight into the differences in psychological states in competitions at home versus away, their scope is limited for at least three reasons. First, in both studies, athletes did express the belief that competing at home provided them with an advantage. Thus, the subsequent search for reasons why was likely characterized by experimental demand (i.e., it is unlikely that subjects would express a belief in a home advantage and then not come up with psychological reasons for why this was the case). Second, the recall protocol used by Jurkovec is susceptible to memory loss, distortion, or enhancement. Consequently, a more ideal protocol

would be to assess the psychological states of competitors blind to the nature of the research purpose and immediately prior to competition at home and away. Finally, the only psychological state tapped by Jurkovec and Bray and Widmeyer that has consistently been linked with performance success is confidence. It is important to determine if other psychological states that have been found to be directly associated with performance success also are influenced by game location.

The purpose of the present study was to compare the psychological states of competitors prior to competitions held at home and away. The specific psychological states assessed were state anxiety (i.e., somatic and cognitive), self-confidence, and mood (i.e., tension, depression, anger, vigor, fatigue, and confusion). It has been demonstrated that a consistent home advantage is present in both team (Courneya & Carron, 1992) and individual sports (Bray & Carron, 1993). Also, athletes hold the perception that competing at home provides them with an advantage (Bray & Widmeyer, 1995; Jurkovec, 1985). Therefore, it was hypothesized that competing at home would be associated with enhanced psychological states. Specifically, it was predicted that in contrast to away competitions, prior to competitions at home the athletes would report higher vigor and self-confidence, and lower tension, depression, anger, fatigue, confusion, cognitive anxiety, and somatic anxiety.

Methods and Procedures

Participants

Participants were 100 male university and club level rugby players (age range = 19 to 34 years, M = 24.1 years, SD = 3.9 years) from six teams. Twelve games were investigated, with all participants involved as starters or replacements for one home and one away game. Participants were selected on the basis of their inclusion as team members for both games. Games between two relatively evenly matched teams were judged to be the most suitable for analysis, as such situations have been proposed to maximize the home advantage in sport (Silva & Andrew, 1987).

Measures

Precompetition mood was measured using the Profile of Mood States (POMS: McNair, Lorr, & Droppleмann, 1971). POMS is a 65-item questionnaire containing six subscales: Tension, Depression, Anger, Vigor, Fatigue, and Confusion. For the 65 descriptors, the participants were asked to rate, "How are you feeling right now". Responses were provided on a 5-point scale anchored by 0 = "not at all" and 4 = "extremely". Validation studies have reported internal consistency coefficients ranging from .84 to .95 (see McNair et al, 1971). Test-retest reliability coefficients ranging from .65 to .74 have been reported for the POMS (McNair et al, 1971) which is appropriate for a measure of psychological state.

The original unipolar POMS was used in preference to the more recently developed bipolar version (POMS-BI: Lorr & McNair, 1988) for three reasons. First, the unipolar version remains the more commonly selected version of POMS by contemporary researchers of sport and exercise in preference to the POMS-BI. Therefore, findings based on the unipolar version have comparative value to a larger number of investigations. Second, there is tentative evidence that the POMS-BI is a less sensitive measure of mood state than the unipolar POMS (see

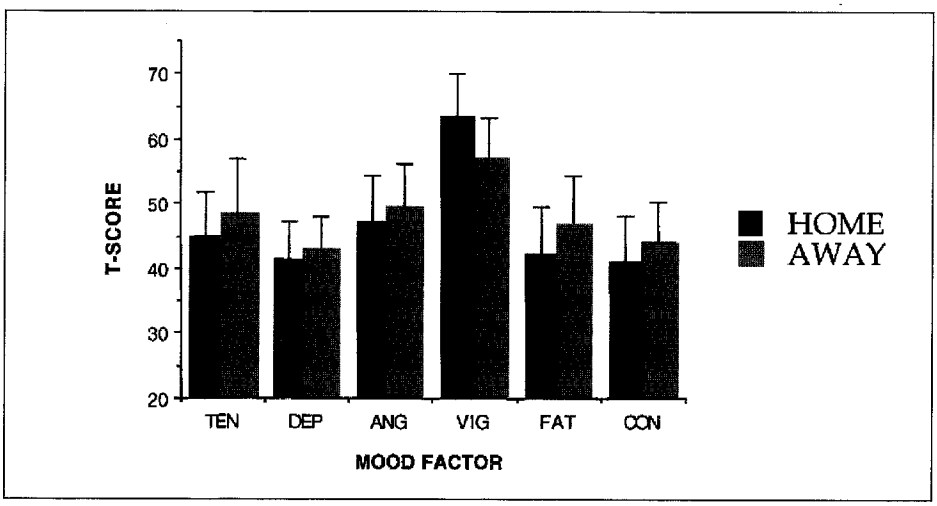

Figure 1: Mood state profiles for home and away competitions.

Measure	Home		Away		t (99)	ES
	M	SD	M	SD		
Competitive Sport Anxiety Inventory-2						
Cognitive	18.03	4.22	20.64	5.08	7.03**	.56
Somatic	13.77	3.73	15.49	3.65	5.47**	.47
Self-confidence	30.08	3.72	26.94	4.13	9.36**	.80
Profile of Mood States						
Tension	44.77	6.93	48.53	8.33	5.45**	.49
Depression	41.42	5.86	42.79	5.12	2.79*	.25
Anger	47.34	7.09	49.46	6.60	2.98*	.31
Vigor	63.41	6.75	56.95	6.26	9.62**	.99
Fatigue	42.25	7.43	46.89	7.39	7.63**	.63
Confusion	41.13	7.00	44.33	6.06	5.47**	.49

Wilks lambda (9,91) = 0.31, $p < .001$
* $p < .01$ ** $p < .001$
ES = Effect Size

Table 1: Comparison of Precompetition Mood and Anxiety Scores for Home and Away Games among Rugby Players (N=100)

Terry, 1995). Third, it has been proposed that the unipolar POMS provides more explicit measures of performance threatening constructs than the POMS-BI (see also Terry, 1995).

Precompetition state anxiety was measured using the Competitive State Anxiety Inventory-2 (CSAI-2: Martens, Burton, Vealey, Bump, & Smith, 1990). The CSAI-2 is a 27-item questionnaire containing three subscales: Cognitive Anxiety, Somatic Anxiety, and Self-confidence. Participants were asked to rate, "How do you feel about this competition" for each of the 27 descriptive phrases, e.g., "I feel calm." Responses were provided on a 4-point scale anchored by 1 = "not at all"

and 4 = "very much so". Validation studies have found internal consistency coefficients ranging from .79 to .90 (see Martens et al, 1990). Test-retest reliability coefficients were not reported by the authors of the CSAI-2, who argued that the changeable nature of state anxiety rendered as inappropriate an indicator of the stability of its measurement over time. The CSAI-2 has been used as the measure of state anxiety in more than 100 published articles.

Procedure

Questionnaires were administered to participants approximately 1 hr prior to a game. Instructions designed to prevent a social desirability bias (Martens et al., 1990) were read to participants, who were assured of confidentiality. No coaches or team officials were present in the locker room during data collection. To balance the order of presentation of the two questionnaires, half the participants completed the POMS followed by the CSAI-2, while the other half completed them in the reverse order. A culturally appropriate alternative word list for the POMS (cf. Albrecht & Ewing, 1989) was available to participants. In all instances, data collection was completed in less than 10 minutes, as agreed in advance with team coaches, and did not interfere with pregame preparation. It is acknowledged that further assessment of pregame psychological states at additional home and away games may have more completely masked the purpose of the study. However, following discussion with team coaches, it was judged that such a strategy would threaten the cooperation of the participants.

The time difference between the home and away fixtures varied between 2 weeks and 5 weeks due to the availability of games judged to be against evenly-matched opposition. The judgment was made on the basis that in the previous game between the two teams the point spread had been less than 10 points. This method of predicting whether games would be evenly matched can be justified retrospectively by the actual mean point spread of 9.6 points (SD = 6.2 points) over the 12 games investigated.

Results

A slight home advantage was observed, with the home teams winning 58.3% of the games (7 wins from 12 games). It is acknowledged that this statistic represents only one win above the six which would be expected by chance and, although consistent with the notion of a home advantage in rugby union, should not be interpreted as evidence of its existence.

Descriptive statistics for the mood and anxiety measures for home and away games are contained in Table 1. Mean mood profiles for the home and away games are presented schematically in Figure 1. To facilitate interpretation, scores for the POMS are represented as standard scores (cf. McNair et al, 1971). As Table 1 shows, regardless of game location, the mean preperformance profile for participants was characterized by above-average scores for Vigor, but below average scores for Tension, Depression, Anger, Fatigue, and Confusion. Such a profile is proposed to reflect mental health and has been termed an iceberg profile (Morgan, 1985). It is notable from Figure 1, however, that mood profiles prior to home games show a more pronounced iceberg shape than those prior to away games.

Scores for the CSAI-2 are represented as raw scores. When compared to published norms for college level male athletes (see Martens et al., 1990, pp. 182-183), the mean for participants prior to home games was at the 54th percentile for Cognitive Anxiety, the 24th percentile for Somatic Anxiety, and the 80th

percentile for Self-confidence. In contrast, the mean scores for participants prior to away games were at the 74th, 34th, and 62nd percentile respectively.

The association of game location with pregame psychological states was assessed by comparing the measures of mood and anxiety taken prior to home and away games. Data were compiled for analysis on SPSS for Windows. A repeated measures multivariate analysis of variance and follow-up univariate analyses (Tabachnick & Fidell, 1996) confirmed significant differences for psychological state measures by game location (see Table 1). As hypothesized, home games were associated with significantly higher scores on the Vigor and Self-confidence subscales, and significantly lower scores on the Tension, Depression, Anger, Fatigue, Confusion, Cognitive Anxiety, and Somatic Anxiety subscales.

Although statistical significance was achieved for all dependent measures, the limitation of comparing changes in self-report data is acknowledged. It is not clear whether, for example, a change of two points on the Cognitive Anxiety scale has any real significance for the rugby player concerned. To ameliorate this inherent limitation, and to gain insight into the meaningfulness of the observed statistical differences, standardized differences (i. e., effect sizes) between the measures of psychological state reported at home and away locations were calculated (see Table 1). Effect sizes ranged from .25 for Depression scores to .99 for Vigor scores (with a mean of .55) suggesting that the effect of game location upon psychological states was moderate generally, relatively small for reported depression and anger, but large for vigor and self-confidence (see Thomas & Nelson, 1996).

Discussion

The purpose of the study was to examine the influence of game location on the state anxiety, self-confidence, and mood of athletes. The results showed that, in contrast to away competitions, prior to competitions at home the athletes expressed greater self-confidence, more vigor, and less tension, depression, anger, fatigue, confusion, cognitive anxiety, and somatic anxiety.

Both Bray and Widmeyer (1995) and Jurkovec (1985) also found that game location influenced the psychological states of the competitors. The results of the present study extend their findings in at least three important ways. The first is in terms of the sport examined. While Bray and Widmeyer and Jurkovec tested college basketball players, the present study provides support for the conclusion that the game location-psychological state relationship is not sport specific. The second is in terms of the design used. Whereas both Bray and Widmeyer and Jurkovec used a retrospective design, a prospective design was used in the present study. Thus, the present study also provides support for the conclusion that the enhanced psychological states observed at home are not simply a product of experimenter demand, a self-fulfilling prophecy, or social desirability. The third is in terms of the psychological states associated with game location. Competing at home had previously been shown to be associated with increased self-confidence, team confidence, and increased pressures to win (Bray & Widmeyer, 1995; Jurkovec, 1985). However, the present results provide support for the conclusion that the home advantage is also associated with increased vigor and reduced tension, depression, anger, fatigue, confusion, and somatic and cognitive anxiety.

Although the present results do provide some insight into the correlates of game

location, a number of issues remain. One issue involves the identification of additional cognitions and affect that may be associated with game location. Individual performance has been shown to be influenced by a variety of factors other than those examined in the present study; including, for example, attentional focus (e.g., Singer, Lidor, & Cauraugh, 1994), concentration, motivation, anxiety control, and mental preparation (e.g., Boyce, 1992). While the intrusive nature of preperformance testing legislated against the inclusion of such additional measures within the present study, future research should determine whether these constructs are also influenced by game location.

Given that the overwhelming majority of published research on the home advantage has focused on team sports, a second issue which should be addressed is the relationship of game location to group-related variables. As the sample of basketball players tested by Bray and Widmeyer (1995) identified team confidence as one of the consequences of competing at home, this relationship would appear to warrant further investigation. Also, the dynamics of the group including its size (Widmeyer, Brawley, & Carron, 1990), composition (Widmeyer, Loy, & Roberts, 1980), collective efficacy (e.g., Paskevich, Brawley, Dorsch, & Widmeyer, 1995), cohesiveness (e.g., Slater & Sewell, 1994), and norm for productivity (cf. Carron, 1988) have been shown to be related to team performance. Thus, future research concerned with the why of the home advantage might do well to examine the dynamics of the group, including the nature of its structure, cohesiveness, and processes.

It was pointed out above that in the Courneya and Carron (1992) model advanced to account for the game location, the four main game location factors (crowd, travel, familiarity, and rules) are assumed to have an impact on the cognitive and/or affective states of athletes, coaches, and officials. A third issue which should be addressed therefore is the influence of game location on the affect and cognitions of both coaches and officials. Finally, a fourth issue is concerned with why the various psychological states identified in the present study were associated with game location. For example, vigor and self-confidence were reduced and fatigue was increased for away games. Were these negative manifestations of psychological preparedness a result of the necessity to travel or some other factor(s)?

While the understanding of the nature and consequences of the home advantage has improved over the past decade numerous questions, especially those pertaining to the mechanisms through which the advantage accrues, remain unanswered. Our discussion represents an attempt to highlight some of these questions and it is hoped that it will stimulate further investigations of the link between psychological responses and game location.

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