

Loughborough University  
Institutional Repository

---

*The influence of stadium  
environment on attendance  
intentions in spectator sport:  
the moderating role of team  
loyalty*

This item was submitted to Loughborough University's Institutional Repository by the/an author.

**Citation:** CHO, H., LEE, H.W. and PYUN, D.Y., 2018. The influence of stadium environment on attendance intentions in spectator sport: the moderating role of team loyalty. *International Journal of Sports Marketing and Sponsorship*, doi:10.1108/IJSMS-04-2017-0025

**Additional Information:**

- This paper was published in the journal *International Journal of Sports Marketing and Sponsorship* and the definitive published version is available at <https://doi.org/10.1108/IJSMS-04-2017-0025>.

**Metadata Record:** <https://dspace.lboro.ac.uk/2134/27499>

**Version:** Accepted for publication

**Publisher:** © Emerald

**Rights:** This work is made available according to the conditions of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0) licence. Full details of this licence are available at: <https://creativecommons.org/licenses/by-nc-nd/4.0/>

Please cite the published version.

The Influence of Stadium Environment on Attendance Intentions in Spectator Sport:

The Moderating Role of Team loyalty

A sense of place is associated with the emotional connection between an individual and a specific location (Tuan, 1974). Tuan highlighted (1977) that “what begins as undifferentiated space becomes place as we get to know it better and endow it with value” (p. 6). In the sport context, a game place can be a focal point providing many pleasant experiences to participants. As people personalize a geographical location, they tend to attribute unique meaning to it based on their experience (Tuan, 1977). In the field of spectator sport, stadium experience is considered ‘original’ as compared to experiencing it via media (Gumbrecht, 1999). In other words, it is necessary to distinguish between direct and indirect experiences (Cho *et al.*, 2017; Cho *et al.*, 2014), and individuals could have more positive memories through direct experience (Merchant and Ford, 2008). As such, perceived environmental quality and a unique stadium atmosphere are important factors in understanding why sport consumers attend the stadium, as opposed to spectating from home (e.g., Holt, 1995; Wakefield and Boldgett, 1999; Wakefield and Sloan, 1995).

Expanding the concept of the sense of place (Tuan, 1974, 1977), Wakefield and Sloan (1995) developed a sportscape model including the five stadium environmental factors (i.e., stadium parking, stadium cleanliness, perceived crowding, food service, and fan control) to explain sport consumer behavior. The tenet of this model contributes to the overall understanding of how the stadium factors influence the desire to stay which in turn affects attendance intentions (Wakefield and Sloan, 1995). That is, the model represents the mediating effect of desire to stay on the relationship between stadium factors and attendance intentions. In addition, the model proposed the concept of team loyalty playing a moderating role in the relationships between the stadium sportscape and both behavioral responses (Wakefield and Sloan, 1995).

However, two issues arise with the constructs in Wakefield and Sloan's (1995) model. First, Wakefield and Sloan tested the moderation effect by simply regressing desire to stay and attendance intentions on the stadium sportscape which was considered as an antecedent of both. In this research, the concept of fan loyalty and its moderating effect is re-analyzed using an advanced statistical technique to support and improve Wakefield and Sloan's sportscape model. Second, Wakefield and Sloan's conceptualization of desire to stay was limited in its operationalization. While the construct consisted of a spectator's desire for the game, stadium, and tendency not to leave, the authors assert that this concept needs to be considered as a cognitive-affective response affecting approach or avoidance behavior (Mischel and Shoda, 1995). Past research in behavior science has suggested that an affective outcome resulting in desiring to stay can play a significant role in explaining spectators' behavioral responses (Oliver, 1992, 2010; Yoshida and James, 2010). For example, Mehrabian and Russell (1974) proposed the environmental psychology behavioral model on the Stimulus-Organism-Response (SOR) framework to investigate the extent that external or environmental variables drive individual behavior. Similarly, the current research uses the environmental psychology model as a theoretical background, which has not been frequently employed in the field of sport management but can provide a more in-depth explanation of the environmental impact in the re-conceptualized sportscape model.

Building upon this line of research inquiries and the conceptual framework (Mehrabian and Russell, 1974; Wakefield and Sloan, 1995), the purpose of this paper was twofold: to examine (a) the direct impacts of both stadium environment and team loyalty on consumers' desire to stay and attendance intentions and (b) the moderation effects of team loyalty on the stadium environment-behavioral intentions relationships. This study was designed to assess the

revisited sportscape model and provide essential information for identifying the interaction effects of stadium environment and team loyalty on consumer behavior in sport settings. This can also shed light on better marketing solutions by assessing and improving Wakefield and Sloan's (1995) sportscape model in a more rigorous way. For instance, marketers can diversify their strategies based on fans' degree of loyalty based on empirical evidence of its interaction effect with stadium environment. Also, marketers can categorize a situation-behavior profile based on the test results of the different effect sizes of stadium environmental and personality variables.

## **Theoretical Background**

### **The Sportscape Model**

Previous research has investigated the factors which could explain the environmental impacts of stadium, including sport facilities, different types of score boards, signage, cheerleaders (Kelley and Turley, 2001), background music (Yalch and Spangenberg, 1990), servicescape (Hightower *et al.*, 2002; Tai and Fung, 1997), applause, famous terrace songs, and the roar of the crowd (Westerbeek and Shilbury, 1999). Finding from these studies suggest that these factors are associated with a spectator's experience at a place. Further, a sense of place can be closely connected during an experience as a stadium can be a platform for sport fans to develop a love for the home team. Tuan (1974) used the term *topophilia* (i.e., "love of place" in Greek) in explaining how a sense of place can shape people's behavioral tendencies. The concept of *topophilia* has been applied to sport to explain how an environment takes a role in developing psychological and social solidarity with a team's home ground (e.g., Giulianotti, 2002). This is also consistent with the psychological frameworks suggesting that emotional experiences are

associated with memory and hence affects behaviors (Mehrabian and Russell, 1974; Mischel and Shoda, 1995).

According to the body of literature, Wakefield and Sloan (1995) developed a comprehensive model of sportscape to examine the effect of stadium environment on spectator attendance, investigating the seven stadium environmental factors (i.e., stadium parking, stadium cleanliness, perceived crowding, food service, fan control, team loyalty, and the desire to stay at the stadium) as antecedents of intentions to attend games through data collected at five Southeastern Conference football stadiums. Their resulting model indicated that five stadium environmental factors (i.e., parking, cleanliness, crowding, food, and fan control) significantly affected the factor of desire to stay, which, in turn, had an effect on attendance intentions. Further, team loyalty positively influenced both the desire to stay and attendance intentions.

Wakefield and Sloan (1995) explained how the five stadium environment factors were related to spectator behavior. First, “stadium parking” is related to fan stadium experience because the amount of time spent finding and/or parking at the stadium can cause frustration (Bitner, 1992). In addition, spectators are more likely to leave the stadium early as they expect heavy traffic at the end of the game. Second, “stadium cleanliness” is considered a function of service levels that are also affected by the age and design of a stadium (Wakefield and Sloan, 1995). While facility age is difficult to control, other aspects of stadium cleanliness can improve the image of a stadium. Third, “perceived crowding” would be another influential factor related to the desire to stay at the stadium. Small seats and narrow aisles can make the spectators feel uncomfortable, affecting spectator willingness to attend games (Wakefield and Sloan, 1995). Fourth, “the quality of food service” including its price and quality is an important element increasing the spectators’ desire to come to and remain in the stadium as they purchase food and

drink while waiting for the game to begin as well as while watching it. This desire is increased by having good food for a reasonable price. Fifth, some fans tend to behave in an offensive or violent manner depending on the intensity of the rivalry (Bernstein, 1991). Such aggressive behavior can be influenced by the consumption of alcohol (Leerhsen, 1988). Wakefield and Sloan found that “fan control” and the desire to stay have a significant relationship, but it would be rather weaker among the five factors as spectators may have less experience with offensive fans. Among the environmental factors, this study employed the five factors of parking, cleanliness, fan control, food, and crowd to examine the environmental impacts in the sportscape model. Accordingly, this study hypothesized the same relationships among the stadium factors, desire to stay, and attendance intentions as follows:

H1: Stadium environment positively affects desire to stay.

H2: Desire to stay positively affects attendance intentions.

H3: Stadium environment has a positive influence on attendance intentions.

Wakefield and Sloan (1995) explored the consequences of loyalty and found that desire to stay and attendance intentions were influenced by the level of team loyalty. They noted that “team loyalty is an allegiance or devotion to a particular team that is based on the spectator’s interest in the team that has developed over time” (p. 159). In other words, loyal fans are more likely to stay and attend a game compared to individuals who have low levels of fan loyalty. It is widely recognized among researchers studying team loyalty that consumers behave differently based on their level of loyalty.

Funk (1998) defined the concept of loyalty as “the correspondence between individual’s willingness to demonstrate loyal behavior and their attitudes that reflect high structural support from various attitude properties” (p. 52). Oliver (1999) developed four sequential stages of

loyalty to explain sport fan behavior. The first stage is cognitive loyalty which individuals recognize and absorb information and then assess it based on the cost-benefit ratio. The second stage, affective loyalty, occurs when an individual's favorable attitude or liking is combined with satisfaction while the third stage, conative loyalty, is considered as behavioral intentions. In the last stage, action loyalty, individuals overcome their obstacles or constraints, putting their thoughts into action. Further, Huddleston *et al.* (2004, p. 215) conducted focus group interviews for the investigation of how consumers defined loyalty and concluded the four levels: "no loyalty (low relative attitude and low repeat patronage), spurious loyalty (low relative attitude and high repeat patronage), latent loyalty (high relative attitude and low repeat patronage), and loyalty (high relative attitude and high repeat patronage)."

In the study of brand management, customer loyalty is identified as the capstone in building brand equity (Keller, 2001). Based on the recognition of loyalty as an important factor predicting consumer behavior, numerous studies have applied this concept to various sport settings (e.g., Bauer *et al.*, 2008; Funk and James, 2006; James, 2001). Fan loyalty carries positive emotions and predisposition of commitment towards a team, leading them to consume a considerable time on following the team. Given the conceptualizations of fan loyalty surrounding their behavioral intentions, the following hypotheses were established:

H4: Loyalty has a positive effect on desire to stay.

H5: Loyalty has a positive effect on attendance intentions.

According to Wakefield and Sloan's (1995) sportscape model, the stadium factors influenced desire to stay, ultimately affecting a fan's attendance intentions. In other words, the desire to stay functions as a mediator in the relationship between stadium environment and attendance intentions. However, a possible moderation effect of loyalty was not appropriately



examined in the previous study (Wakefield and Sloan, 1995) as they used this construct as an antecedent of the behavioral constructs, rather than as a moderator on the relationship between stadium environment and the behavioral constructs, warranting the need to re-examine its moderating effect (c.f., Mehrabian and Russell, 1974). To address this issue, this research employed a more rigorous technique suggested by Klein and Moosbrugger (2000) for testing the latent moderation effect of loyalty by re-conceptualizing Wakefield and Sloan's (1995) sportscape model based on theoretical backgrounds of environmental psychology (Mehrabian and Russell, 1974).

### **Environmental Psychology Behavioral Model: Moderation Effect of Loyalty**

Mehrabian and Russell (1974) developed the environmental psychology behavioral model (see Figure 1). According to this model, individuals organize the stimuli that may induce their emotional reactions resulting in behavioral responses. In addition, Mehrabian and Russell (1974) contended that individual predispositions aid in understanding of these behavioral reactions, positing that the degree of emotional reactions caused by the environment depends on a person's personality. In other words, individuals' intervening reactions – pleasure, arousal, and dominance – differ based on the environment and their personality and cause two reaction variables, approach and avoidance. Approach behaviors are considered the positive aspects of behavior, such as a desire to stay, a willingness to return to the environment, and interest. On the other hand, avoidance behaviors are negative, relating to dissatisfaction, a desire to leave the environment, and limited performance. Mehrabian and Russell's (1974) model has been used in the marketing field to investigate the relationship between environmental stimuli, consumer emotion, and behavior (Milliman, 1986; Yalch and Spangenberg, 1990). This research applied

Mehrabian and Russell's (1974) model to hypothesize a relationship between environmental factors and sport fans' emotions associated with fan loyalty.

[Insert Figure 1 about here]

Personality has been defined as “psychological qualities that contribute to an individual’s enduring and distinctive patterns of feeling, thinking and behaving” (Cervone and Pervin, 2009, p. 8). Mehrabian and Russell (1974) considered personality as individual predispositions affecting the organism and response to environmental stimuli. Consistent with the environmental psychology model, Mischel and Shoda’s (1995) cognitive-affective personality system explicate the dynamic encoding process and interactions that generate situation-behavior profiles. In the field of spectator sport, loyal fans are unique sport consumers and have an enduring attitude and behavior regarding their favorite sport teams. Fan characteristics are reflected by the degrees and sequential stages of loyalty, and, therefore, can be considered an aspect of fan personality. Accordingly, Wakefield and Sloan (1995) identified loyalty as a moderator affecting stadium environment factors and attendance intentions in a spectator sport consumption. Based on Mehrabian and Russell’s (1974) model and the sportscape model (Wakefield and Sloan, 1995), this study tested the moderating effect of loyalty in the stadium environment and sport fan behavior model seen in Figure 2. Whereas the results of Wakefield and Sloan’s (1995) study found that sport spectators’ loyalty influenced their desire to stay and attendance intentions, the interaction among the stimulus components of an environment and loyalty was not tested. While the present study hypothesized team loyalty as an antecedent of behavioral constructs (H4 and

H5), it also expected the interaction effect with stadium environment. Hence, the following hypotheses were tested:

H6: The interaction effect between stadium environment and loyalty has a positive effect on desire to stay.

H7: The interaction effect between stadium environment and loyalty has a positive effect on attendance intentions.

[Insert Figure 2 about here]

## **Method**

### **Participants and Procedures**

The participants for this study were spectators of professional baseball in South Korea and recruited from eight fan portals on the Internet using an on-line survey tool. Of the 500 contacts, a total of 392 responses (response rate: 81.67%) were obtained, 248 males and 144 females. The approval of this research was granted by Institutional Review Board (IRB) at the university where one of the authors was affiliated.

### **Instrumentation**

The scales of stadium factors, desire to stay, and team loyalty were adopted from Wakefield and Sloan (1995). To measure attendance intentions, Wakefield and Sloan (1995) used only one item. However, since one item provides limited analysis of and representation for a construct, this study used a scale of attendance intentions adapted from Carroll's (2009) three-item scale assessing behavioral intentions. Appropriate modifications were made to the scales to ensure their applicability to the setting of Korean professional baseball. We reverse-coded the crowding items as this factor is a negative response and would have a negative impact on both desire to

stay and attendance intentions (Wakefield and Sloan, 1995).. All items were measured on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

### **Statistical Analyses**

While the reliability and validity of the instruments used in the present study have been assessed in previous studies, the measurement model of the constructs was evaluated prior to examining the proposed relationships (H1-H5) in the structural model (Anderson and Gerbing, 1988). In addition, latent moderated structural equations (LMS; Klein and Moosbrugger, 2000; Klein and Muthén, 2007) were used to test the moderation effects of loyalty on the relationships between the stadium environment and the desire to stay as well as between stadium environment and attendance intentions (H6-H7). A robust maximum likelihood estimation was performed in all analyses using Mplus 6.0 at an alpha level of .05. Adjusted  $\chi^2$ -difference tests using the formula found in Satorra and Bentler (2001) and log-likelihood ratio tests were used to evaluate the nested models of factor correlations and LMS model (Kline, 2011).

**Psychometric properties.** Confirmatory factor analysis (CFA) was conducted to examine the psychometric properties of the measures. The average variance extracted values (AVE) and the reliability coefficients were computed for evidence of convergent validity, and factor correlations were compared with the square root of AVE values to determine discriminant validity (Fornell and Larcker, 1981). To account for measurement errors, the data fit of the covariance-variance matrices associated with the measurement model was evaluated using multiple fit indices (Hu and Bentler, 1999). In addition to the corrected Satorra-Bentler (S-B)  $\chi^2$  values (Satorra and Bentler, 2001), Comparative Fit Index (CFI; Bentler, 1990), Standardized Root Mean Square Residual (SRMR; Bentler, 1990), and Root Mean Square Error of Approximation (RMSEA; Steiger, 1990) were used to evaluate the goodness of fit.

**Structural equation modeling.** The two-step approach developed by Anderson and Gerbing (1988) was used here to examine the model. First, a higher-order measurement model of the stadium factors was tested, followed by the examination of the proposed revised sportscape model using structural equation modeling (SEM). More specifically, the fit of the data covariance matrix on the represented matrix was tested to examine the hypothesized relationships, each being estimated as a path coefficient. Multiple fit indices were subsequently applied. In the original examination of the sportscape model, Wakefield and Sloan (1995) constrained the effects of stadium factors on attendance intentions to zero and did not examine the moderation effect in their model. Using a LMS model, the present study tested the interaction effects of loyalty based on the intended conceptualization suggested by Wakefield and Sloan (1995). LMS was used to test the moderation effect because of its statistical rigor and robustness to nonnormality (Klein and Moosbrugger, 2000; Klein and Muthén, 2007) compared to conventional methods in estimating latent variable interactions (e.g., Bollen, 1996; Marsh *et al.*, 2004; Ping, 1996; Wall and Amemiya, 2001).

## Results

### Measurement Model

The measurement model for the revised sportscape model fit the data well as the global fit indices were satisfactory (S-B  $\chi^2 = 373.29$ ,  $df = 224$ , scaling correction factor [c] = 1.06, CFI = .95, SRMR = .06, RMSEA = .06). The items representing each construct demonstrated satisfactory psychometric properties as seen in Table 1. All factor loadings were significant ( $p < .001$ ), and the AVE values for constructs with multiple indicators ranged from .62 (crowding and parking) to .94 (attendance intentions), indicating adequate convergent validity. Discriminant validity was supported as the factor correlations were lower than the square root of their

respective AVE values (see Table 2). Chi-square difference tests for factor correlations higher than the AVE values compared to perfect correlation indicated significant differences ( $p < .001$ ). Thus, the measurement model indicated good psychometric properties. A parsimonious higher-order model testing the convergence of the stadium factors was not significantly worse than the single-order model ( $\Delta S-B \chi^2 = 25.17, \Delta df = 17, p > .05$ ); the higher-order factor of stadium environment reflected well the underlying stadium factors. As a result, the second-order model was chosen to test the hypothesized model (see Figure 2).

[Insert Table 1 about here]

[Insert Table 2 about here]

### Structural Equation Modeling

SEM of the reconceptualized sportscape model indicated a good fit to the data ( $S-B\chi^2 = 398.74, df = 241, c = 1.06, CFI = .95, SRMR = .07, RMSEA = .06$ ). According to the estimates of the path coefficients reported in Table 3, the stadium environment did not have a significant direct effect on the endogenous variables (i.e.,  $b = .04$  for desire to stay and  $b = -.07$  for attendance intentions). However, both paths from team loyalty to desire to stay ( $b = .71, SE = .08, p < .001$ ) and to attendance intentions ( $b = .58, SE = .11, p < .001$ ) were significant. In addition, desire to stay significantly influenced attendance intentions ( $b = .32, SE = .12, p < .01$ ).

In terms of the moderation effects, the latent interaction between stadium environment and loyalty had a significant effect on desire to stay ( $b = .12, SE = .05, p < .01$ ) and attendance intentions ( $b = .12, SE = .05, p < .05$ ). That is, while higher loyalty led to higher desire to stay and attendance intentions, fans' experience of positive stadium environment intensified the effect. Thus, all hypotheses were supported except H1 and H3. Overall, the stadium environment

did not show a significant direct effect on desire to stay and attendance intentions but only influenced the endogenous variables through the moderating effects.

[Insert Table 3 about here]

The results indicate that stadium environment had nonsignificant effects on desire to stay and attendance intentions, but rather it positively influenced both desire to stay and attendance intentions when interacting with team loyalty. That is, influence of stadium environment depends on the level of team loyalty. While fans with more positive perceptions about stadium environment led to higher desire to stay and attendance intentions, the fans' team loyalty intensified the effects.

### **Discussion**

In this study, we re-examined the sportscape model of spectator attendance, by reframing and strengthening its validity based on the theoretical background of stadium environmental perceptions (Mehrabian and Russell, 1974; Tuan, 1974) and testing the moderation effect of team loyalty more rigorously. The interaction effects found in the present study explain how team loyalty affect the direction and the strength of the relationships between the stadium environment and both desire to stay and attendance intentions, where Wakefield and Sloan (1995) did not fully justify in their sportscape model. The significant interaction implies that stadium environment factors would more positively influence the loyal fans' desire to stay and behavioral intentions. Further, the re-conceptualized sportscape model extends the existing theory of how team loyalty is developed. According to the psychological continuum model, Funk (2008) conceptualized that allegiance stage where team loyalty is built is developed on level of fans' involvement and the evaluation s of personal, psychological, and environmental inputs.

While such cognitive and affective stimuli in an environmental place are processed by fans, individual predispositions of team loyalty could play a role in how fan reactions such as desire to stay are intensified. These results concerning how to further develop and strengthen the relationship between a team and its fans could contribute to the fan loyalty literature by incorporating the amount and intensity of environmental stimuli in understanding fan attitude and behavior. As a development of customer loyalty is considered the summit of marketing efforts, marketers must find environmental stimuli that intensify die-hard fans' positive experience at the venue. For instance, a positive environmental experience could further soothe loyal fans' response to a loss (Madrigal, 2008; Madrigal and Chen, 2008) by saying, "at least I had a good time at the home stadium". In addition, providing proper services resulting in satisfied loyal fans would improve the profitability of the sport team.

Interpreting the results in relation to Mehrabian and Russell's (1974) environmental psychology framework, the environmental stimuli at a stadium exhibited a positive effect on affective and behavioral variables when team loyalty was higher. Past research revealed that fans who strongly identify with their favorite teams tend to attend more games and expect the future success of the teams more positively (e.g., Wann and Dolan, 1994). This finding is also consistent with Tuan's (1974) study of environmental perception. In relation to individual experience, fans with higher loyalty better experience a sense of place since they attribute deeper meaning to that specific environment (Funk and James, 2006). As past research has found that the development of team loyalty and attaching meanings to an environment can foster socialization in the stadium (James, 2001; Lee *et al.*, 2013; Melnick, 1993). Moreover, the conclusion from Petrick's (2004) study that loyal tourists are more likely to revisit and spread



their positive experiences by word of mouth can also be explained by approach and avoidance behavior.

It is suggested that marketers need to further, strategically and systematically, manage the symbolic meanings of their venue. For example, iconic sites at a sports venue such as the frieze that lines the roof of the Yankee Stadium and the Amen Corner at the Augusta National Golf Club can be a place where fans cherish the moment of being there. In addition, other tangible elements such as parking service, food, and cleanliness and intangible elements such as fan control would influence the experiences of spectators at major sport events. Further, Facebook's check-in feature can be encouraged by marketers to utilize this as means of brand communication (Schivinski and Dabrowski, 2015). The fact that the environmental framework exhibits explanatory power indicates the need for the investigation of other relevant behavioral constructs in the context of spectator sport.

The results from this study are also connected with Uhrich and Benkenstein's (2010) model of sport stadium atmosphere, in particular their concept of atmosphere, as both studies share the framework of environmental psychology (Mehrabian and Russell, 1974). Our finding that team loyalty significantly moderates how stadium environment influences one's desire to stay and intention to attend the place imply that the atmosphere factors can potentially interact with predisposition variables. Depending on a spectator's level of loyalty, how stadium atmosphere is experienced at an individual level can vary. Nonetheless, team loyalty is an important factor accounting for behavioral outcomes.

The findings of this research concerning the significant role of desire to stay adds to the literature by highlighting the effect of cognitive-affective response on approach or avoidance responses since there was more emphasis on cognitive process in fan behavior. Specifically, the

significant relationships with team loyalty and spectator intentions could expand the scope of research on fan behavior (e.g., Funk and James, 2006; Yoshida and James, 2010). Moreover, applying the environmental approach, future studies incorporating other affective responses could also expand the theoretical boundaries of fan behavior. For example, identifying other intervening variables of environmental psychology could help sport managers better understand how a stadium atmosphere is constructed by cognitive and affective responses (e.g., Lee *et al.*, 2013; Uhrich and Benkenstein, 2010). Furthermore, future research should investigate the significant indirect effects of desire to stay. For instance, Lam *et al.* (2011) studied casino visitor behavior, finding significant relationships among servicescape, satisfaction, revisit intentions, and desire to stay. Causal chains in how spectator satisfaction is affected by cognitive and affective stimuli and indirect effects on desire to stay should be examined more fully in future studies.

Comparing the standardized effects, team loyalty showed strong effects (Cohen, 2003) on desire to stay and attendance intentions. The direct effects of team loyalty on desire to stay and attendance intentions indicated the strong magnitude of the relationships. Moreover, the path from desire to stay to attendance intentions was also significant. These results were consistent with Funk and James' (2006) finding that the attachment process of developing meanings leads to more stable behavior change in spectators. As more than 50 percent of variations for both endogenous variables were explained by the antecedent variables, the underlying processes of the development of team loyalty should be further investigated. To do so, an environmental approach should also be incorporated as significant interactions were found between stadium environment and loyalty.

Past studies suggested that increasing fan involvement led to enhancing fan loyalty (Funk and James, 2001, 2006; Lock *et al.*, 2012; Underwood *et al.*, 2001). The findings from this study suggest that the stadium environment experience has a positive interaction with loyalty. The authors assert that environmental factors leverage fan experience when more involvement is elicited. Each underlying factor of stadium environment could be an attachment point when fan involvement connects a sense of meaning to it. For example, placing team logos on each venue and giving meaning to various places by using positive images can be ways to stimulate fan loyalty (c.f., Bauer *et al.*, 2008). Further, stimulating loyalty can develop into team identification when internal meanings are associated with the sense of place (Lock *et al.*, 2012).

In particular, a specific stadium environment could be facilitated by incorporating stimuli generating fan loyalty. Given the significant moderation effect, logos, banners, and signage that trigger fan loyalty can enhance the stadium atmosphere, resulting in an improved spectator experience. For example, a message on megatron asking fans to shout out and to cheer during the game to show their team pride has been found to be an effective tactic for creating fan emotion (Decrop and Derbaix, 2010; Lee *et al.*, 2013)

Sport fans develop special meanings for places where sporting events occur. From a marketing perspective, these places, for example stadiums, are where sport spectators experience various service. Evidenced by the interaction effect of stadium environment factors and team loyalty on fans' cognitive-affective responses and behaviors, marketers should develop strategies for creating meaningful attachments to environmental venues. Incorporating the factors of environmental perception (e.g., Lee *et al.*, 2013; Mehrabian and Russell, 1974; Tuan, 1974) can help determine the significant associations consumers make and, thus, provide a holistic understanding of the fan consumption phenomenon.

### **Limitations and Suggestions for Future Studies**

The first limitation is the scope of this study. The present study is developed on the professional baseball league in a specific region. This condition is a clear limitation in terms of the generalizability of the findings. Future research needs to include systematic replications of the current model across different sports, leagues, and markets. Another limitation of this study was while it applied Mehrabian and Russell's (1974) environmental psychology model, along with the Wakefield and Sloan's (1995) concept, the study focused on the effect of the stimuli on behavioral responses. In other words, we did not examine directly how the organism of the primary emotional responses interacts as a mediator. Future studies should attempt to measure and investigate the role of the emotion-eliciting qualities (e.g., pleasure, arousal, dominance; Mehrabian and Russell, 1974) between stimuli and behavioral responses. For example, the pleasure, arousal, and dominance (PAD) emotional state scale (Mehrabian and Russell) could be used in future studies expanding the sportscape model. Further, as Mehrabian and Russell (1974) suggested, researchers should carefully select the physical and social stimuli among the endless list of variables that can be employed from environmental settings. In this, measures of physical quantity such as flow of noise (dB) and psychophysiological evidence such as electroencephalogram could be utilized (Lee *et al.*, 2013).

### References

- Aden, R. C. (1995), "Nostalgic communication as temporal escape: "when it was a game's" reconstruction of a baseball work community", *Western Journal of Communication*, Vol. 59 No. 1, pp. 20-38.
- Anderson, J. C., & Gerbing, D. W. (1988), "Structural equation modeling in practice: a review and recommended two-step approach", *Psychological Bulletin*, Vol. 103 No. 3, pp. 411-423.
- Baker, D. A., & Crompton, J. L. (2000), "Quality, satisfaction, and behavioral intentions", *Annals of Tourism Research*, Vol. 27 No. 3, pp. 785-804.
- Bauer, H. H., Stokburger-Sauer, N. E., & Exler, S. (2008), "Brand image and fan loyalty in professional team sport: a refined model and empirical assessment", *Journal of Sport Management*, Vol. 22, pp. 205-226.
- Bentler, P. M. (1990), "Comparative fit indexes in structural models", *Psychological Bulletin*, Vol. 107 No. 2, pp. 238-246.
- Berlyne, D. E. (1960), *Conflict, Arousal and Curiosity*. McGraw-Hill, New York, NY.
- Bollen, K. A. (1996), "A limited-information estimator for LISREL models with and without heteroscedastic errors", in Marcoulides G. A. & Schumacker R. E. (Eds.), *Advanced Structural Equation Modeling Techniques*, Erlbaum, Mahwah, NJ, pp. 227-241.
- Carroll, M. S. (2009), "Development of a scale to measure perceived risk in collegiate spectator sport and assess its impact on sport consumption", Unpublished doctoral dissertation, University of Florida, Gainesville, FL.

- Chang, K. (2009), "The impact of perceived physical environments on customers' satisfaction and return intentions", *Journal of Professional Services Marketing*, Vol. 21 No. 2, pp. 75-85.
- Cervone, D., & Pervin (2009), *Personality: Theory and research*, Hoboken, NJ: John Wiley and Sons.
- Chen, C., F., & Tsai, D. C. (2007), "How destination image and evaluative factors affect behavioral intentions?", *Tourism Management*, Vol. 28, pp. 1115-1122.
- Chi, C., & Qu, H. (2008), "Examining the structural relationships of destination image and destination loyalty: an integrated approach", *Tourism Management*, Vol. 29, pp. 624-636.
- Cho, H., Ramshaw, G., & Norman, W. (2014), "A conceptual model for nostalgia in the context of sport tourism: re-classifying the sporting past", *Journal of Sport Tourism*, Vol. 19 No. 2, pp. 145-167.
- Cho, H., Lee, H.-W., Moore, D., Norman, W., & Ramshaw, G. (2017), "A multilevel approach to scale development in sport tourist nostalgia", *Journal of Travel Research*, available at: <https://doi.org/10.1177/0047287516683834> (assessed 5 January 2017).
- Cohen, J. (2003), "A power primer", in Kazdin A. E. (Ed.), *Methodological Issues & Strategies in Clinical Research* (3rd ed.), American Psychological Association, Washington, DC, pp. 427-436.
- Cronin, J. J., & Taylor, S. A. (1992), "SERVPERF versus SERVQUAL: reconciling performance-based and perceptions-minus-expectations measurement of service quality", *Journal of Marketing*, Vol. 58 No. 1, pp. 125-131.
- Decrop, A., & Derbaix, C. (2010), "Pride in contemporary sport consumption: a marketing perspective", *Journal of the Academy of Marketing Science*, Vol. 38 No. 5, pp. 586-603.

- Donovan, R., & Rossiter, J. (1982), "An investigation into the determinants of customer satisfaction", *Journal of Marketing Research*, Vol. 19, pp. 491-504.
- Fornell, C., & Larcker, D. F. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research*, Vol. 18 No. 1, pp. 39-50.
- Funk, D. C. (1998), "Fan loyalty: the structure and stability of an individual's loyalty toward an athletic team", Unpublished doctoral dissertation, Ohio State University, Columbus, OH.
- Funk, D. C., & James, J. (2001), "The psychological continuum model: a conceptual framework for understanding an individual's psychological connection to sport", *Sport Management Review*, Vol. 4 No. 2, pp. 119-150.
- Funk, D. C., & James, J. D. (2006), "Consumer loyalty: the meaning of attachment in the development of team allegiance", *Journal of Sport Management*, Vol. 20, pp. 189-217.
- Giulianotti, R. (2002). Supporters, followers, fans, and flaneurs. *Journal of Sport & Social Issues*, Vol. 26 No. 1, pp. 25-46.
- Gumbrecht, H. U. (1999), "Epiphany of form: on the beauty of team sports", *New Literary History*, Vol. 30 No. 2, pp. 351-372.
- Hightower, R., Brady, M. K., & Baker, T. L. (2002), "Investing the role of the physical environment in hedonic service consumption: an exploratory study of sporting events", *Journal of Business Research*, Vol. 55, pp. 697-707.
- Holt, D. B. (1995), "How consumers consume: a typology of consumption practices", *The Journal of Consumer Research*, Vol. 22, pp. 1-16.

- Hu, L., & Bentler, P. M. (1999), "Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives", *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 6 No. 1, pp. 1-55.
- Huddleston, P., Whipple, J., & VanAuken, A. (2004), "Food store loyalty: application of a consumer loyalty framework", *Journal of Targeting, Measurement and Analysis for Marketing*, Vol. 12 No. 3, pp. 213-230.
- James, J. D. (2001), "The role of cognitive development and socialization in the initial development of team loyalty", *Leisure Sciences*, Vol. 23 No. 4, pp. 233-261.
- Keller, K. L. (2001). Building Customer-Based Brand Equity. *Marketing Management*, Vol. 10 No. 2, pp. 14-19.
- Kelley, S. W., & Turley, L. W. (2001), Consumer perceptions of service quality attributes at sporting events", *Journal of Business Research*, Vol. 54, pp. 161-166.
- Klein, A., & Moosbrugger, H. (2000), "Maximum likelihood estimation of latent interaction effects with the LMS method", *Psychometrika*, Vol. 65 No. 4, pp. 457-474.
- Klein, A. G., & Muthén, B. O. (2007), "Quasi-maximum likelihood estimation of structural equation models with multiple interaction and quadratic effects. *Multivariate Behavioral Research*, Vol. 42 No. 4, pp. 647-673.
- Kline, R. B. (2011), *Principle and Practice of Structural Equation Modeling* (3<sup>rd</sup> ed.), The Guilford Press, New York, NY.
- Lam, L. W., Chan, K. W., Fong, D., & Lo, F. (2011), "Does the look matter? the impact of casino servicescape on gaming customer satisfaction, intention to revisit, and desire to stay", *International Journal of Hospitality Management*, Vol. 30 No. 3, pp. 558-567.



- Lee, H.-W., Kim, Y. D., Newman, J. I., & Kim, Y. (2013), "Group emotion in spectator sport: an interdisciplinary approach to affective qualia", *Journal of Multidisciplinary Research*, Vol. 5 No. 2, pp. 49-66.
- Lock, D., Taylor, T., Funk, D., & Darcy, S. (2012), "Exploring the development of team identification", *Journal of Sport Management*, Vol. 26 No. 4, pp. 283-294.
- Madrigal, R. (2008). Hot vs. cold cognitions and consumers' reactions to sporting event outcomes. *Journal of Consumer Psychology*, Vol. 18 No. 4, pp. 304-319.
- Madrigal, R., & Chen, J. (2008). Moderating and mediating effects of team identification in regard to causal attributions and summary judgments following a game outcome. *Journal of Sport Management*, Vol. 22, pp. 717-733.
- Marsh, H. W., Wen, Z., & Hau, K.-T. (2004), "Structural equation models of latent interactions: evaluation of alternative estimation strategies and indicator construction. *Psychological Methods*, Vol. 9 No. 3, pp. 275-300.
- Mehrabian, A., & Russell, J. A. (1974), *An Approach to Environmental Psychology*, MIT Press, Cambridge, MA.
- Melnick, M. J. (1993), "Searching for sociability in the stands: a theory of sports spectating", *Journal of Sport Management*, Vol. 7, pp. 44-60.
- Merchant, A., & Ford, J. (2008), "Nostalgia and giving to charity: a conceptual framework for discussion and research", *International Journal of Nonprofit and Voluntary Sector Marketing*, Vol. 13, pp. 13-30.
- Milliman, R. E. (1986), "The influence of background music on the behavior of restaurant patrons", *Journal of Consumer Research*, Vol. 13 No. 2, pp. 286-289.

- Mischel, W., & Shoda, Y. (1995), "A cognitive-affective system theory of personality: reconceptualizing situations, dispositions, dynamics, and invariance in personality structure", *Psychological Review*, Vol. 102 No. 2, pp. 246-268.
- Noe, F. P., & Uysal, M. (1997), "Evaluation of outdoor recreational settings: a problem of measuring user satisfaction", *Journal of Retailing and Consumer Services*, Vol. 4 No. 4, pp. 223-230.
- Oliver, R. L. (1992), "An investigation of the attribute basis of emotion and related affects in consumption: suggestions for a stage-specific satisfaction framework", *Advances in Consumer Research*, Vol. 19 No. 1, pp. 237-244.
- Oliver, R. L. (1999), "Whence consumer loyalty?", *Journal of Marketing*, Vol. 63, pp. 33-34.
- Oliver, R. L. (2010), "*Satisfaction: A Behavioral Perspective on the Consumer* (2nd ed.), M.E. Sharpe, Armonk, NY.
- Petrick, J. F. (2004), "Are loyal visitors desired visitors?", *Tourism Management*, Vol. 25 No. 4, pp. 463-470.
- Petrick, J. F., & Backman, S. J. (2002), "An examination of the determinants of golf travelers' satisfaction", *Journal of Travel Research*, Vol. 40 No. 3, pp. 252-258.
- Ping, R. A. (1996), "Latent variable interaction and quadratic effect estimation: a two-step technique using structural equation analysis", *Psychological Bulletin*, Vol. 119 No. 1, pp. 166-175.
- Russell, J. & Pratt, G. (1980), "A description of the affective quality attributed to environments", *Journal of Personality and Social Psychology*, Vol. 38 No. 3, pp. 311-322.
- Satorra, A., & Bentler, P. M. (2001), "A scaled difference chi-square test statistic for moment structure analysis", *Psychometrika*, Vol. 66 No. 4, pp. 507-514.

- Schivinski, B., & Dabrowski, D. (2015). The impact of brand communication on brand equity through facebook. *Journal of Research in Interactive Marketing*, Vol. 9 No. 1, pp. 31-53.
- Steiger, J. H. (1990), "Structural model evaluation and modification: an interval estimation approach", *Multivariate Behavioral Research*, Vol. 25 No. 2, pp. 173-180.
- Tai, H. C., & Fung, A. M. C. (1997), "Application of an environmental psychology model to in-store buying behavior", *The International Review of Retail Distribution and Consumer Research*, Vol. 7 No. 4, pp. 311-337.
- Tuan, Y. F. (1974), *Topophilia: A Study of Environmental Perception, Attitudes, and Values*, Prentice-Hall, Englewood Cliffs, NJ.
- Tuan, Y. F. (1977), *Space and Place: The Perspective of Experience*, University of Minnesota Press, Minneapolis, MN.
- Uhrich, S., & Benkenstein, M. (2010), "Sport stadium atmosphere: formative and reflective indicators for operationalizing the construct", *Journal of Sport Management*, Vol. 24, pp. 211-237.
- Uhrich, S., & Benkenstein, M. (2012), "Physical and social atmospheric effects in hedonic service consumption: customers' roles at sporting events", *The Service Industries Journal*, Vol. 32 No. 11, pp. 1741-1757.
- Underwood, R., Bond, E., & Baer, R. (2001), "Building service brands via social identity: lessons from the sports marketplace", *Journal of Marketing Theory and Practice*, Vol. 9 No. 1, pp. 1-13.
- Wakefield, K. L., & Blodgett, J. G. (1999), "Customer response to intangible and tangible service factors", *Psychology & Marketing*, Vol. 16 No. 1, pp. 51-68.

- Wakefield, K. L., & Sloan, H. J. (1995), "The effects of team loyalty and selected stadium factors on spectator attendance", *Journal of Sport Management*, Vol. 9, pp. 153-172.
- Wall, M. M., & Amemiya, Y. (2001), "Generalized appended product indicator procedure for nonlinear structural equation analysis", *Journal of Educational and Behavioral Statistics*, Vol. 26 No. 1, pp. 1-29.
- Wann, D.L., & Dolan, T.J. (1994), "Attributions of highly identified sports spectators", *Journal of Social Psychology*, Vol. 134, pp. 783-792.
- Westerbeek, H. M., & Shilbury, D. (1999), "Increasing the focus on "Place" in the marketing mix for facility dependent sport services", *Sport Management Review*, Vol. 2, pp. 1-23.
- Yalch, R. & Spangenberg, E. (1990), "Effects of store music on shopping behavior", *Journal of Consumer Marketing*, Vol. 7 No. 2, pp. 55-63.
- Yoshida, M., & James, J. D. (2010), "Customer satisfaction with game and service experiences: antecedents and consequences", *Journal of Sport Management*, Vol. 24, pp. 338-361.