Curiosity generating advertisements and their impact on sport consumer behavior ☆

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ABSTRACT

The purpose of this study was to expand on the work of Menon and Soman and examine the impact of different levels of knowledge gap on the generation of state curiosity in a sport setting, and to investigate the impact of state curiosity on the intention to watch a novel sport. A total of 507 participants were recruited and ANOVAs, multiple regressions, and structural equation modeling were employed to examine the relationships. The results indicated that generated state curiosity was significantly greater for the group that viewed the moderate knowledge gap advertisement. Results also indicated that generated state curiosity had a significant mediating effect on the relationship between knowledge gap and the intention to watch the novel sport indicated in the advertisement. This study suggests that an increased understanding of the impact of curiosity and knowledge gap on sport consumers may be useful. Detailed implications for both practitioners and researchers are suggested.

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1. Introduction

Sport and the sport industry have had a meaningful impact on our society (Park, Mahony, & Greenwell, 2010; Wann, Melnick, Russell, & Pease, 2001). The size of the sport industry is estimated to become two times greater than the U.S. automobile industry and seven times greater than the U.S. movie industry, and is currently estimated at $470 billion (Plunkett Research, Ltd., 2013). In addition, various sport-related activities, such as sport participation, sport attendance, and watching or listening to sports via the media, have been regarded as being among the most popular recreational activities in our daily life (Bodet & Bernache-Assollant, 2011). Therefore, the meaning of sport, sport-related activities, and its industry are important in our society.

As the sport industry has become more developed and competitive (Mahony & Howard, 2001; Wann et al., 2001), sport marketers have increased their efforts to turn casual consumers into loyal consumers in order to maximize profits. In this competitive market environment, however, shifting consumers' loyalty is not an easy job for sport marketers due to the

already strong interest in traditionally popular sports (Park, Andrew, & Mahony, 2008). Therefore, developing new consumers is key for both popular and new sports to remain successful and survive in the current competitive marketplace (Park et al., 2010). In particular, sport marketers need to focus more on the generation of new consumers for new sports (i.e., novel sports) that have new concepts and rules, and may have trouble getting into the consumers' consideration sets (Mahony & Howard, 2001). Facilitating consumers' learning about information and attributes of new sports is the first step in the process of creating new sport consumers, because consumers need to learn about the benefits and attributes of new products or services before becoming interested in them (Lehmann, 1994; Urban, Weinberg, & Hauser, 1996). Consequently, motivating consumers to learn about the key benefits and attributes of novel sports is an important goal during product or service launch (Menon & Soman, 2002).

Although numerous studies have investigated a variety of factors affecting consumers' sport attendance and spectatorship, very few have examined how consumers become interested in and are initially attracted to novel sports. Moreover, the preceding studies on sport consumer behaviors have rarely dealt with the relationship between the level of cognitive stimulation (i.e., information and knowledge) given to consumers and how individuals' consumptive behaviors are influenced by the cognitive stimulation. While many factors may motivate an individual to become interested in and to be initially attracted to sports, one of the possibilities explaining sport consumer behaviors related to learning about novel sports may be curiosity and curiosity knowledge gap (Park et al., 2008). For example, Menon and Soman (2002) examined the effect of curiosity on the effectiveness of Internet advertising using three levels of the knowledge gap – high, moderate, and low. Their findings indicated that more curiosity can be generated for Internet advertising when the knowledge gap is moderate compared to when it is either high or low. They also found that generated curiosity results in a number of positive behaviors related to the product being advertised (e.g., greater information search, product interest). Therefore, their findings were an important step forward in this line of research and laid theoretical foundations for further examining the relationship between the level of knowledge and information given to consumers and its impact on sport consumer behaviors.

2. Theoretical background

2.1. Curiosity

Curiosity is defined as "a desire to acquire new knowledge and new sensory experience that motivates exploratory behavior" (Litman & Spielberger, 2003, p. 75). Similarly, Voss and Keller (1983) argued that "curiosity is a motivational prerequisite for exploratory behavior" (p. 17). Thus, curiosity motivates human exploratory behaviors in order to seek and acquire new knowledge and novel stimuli. As one of the major motivators of human exploratory behaviors, studies on curiosity have been undertaken in several domains, such as the educational, psychological, and occupational areas.

Berlyne (1960) made one of the earliest contributions to this line of research by classifying curiosity between specific and diverse curiosity and between perceptual and epistemic curiosity (see Table 1). Berlyne defined specific curiosity "as the desire for actively seeking depth in one's knowledge and experience with a particular stimulus or activity" (Kashdan, Rose, & Fincham, 2004, p. 291). Berlyne conceptualized diversive curiosity as actively seeking out varied sources of stimulation as a result of boredom fostering contact with new stimuli and opportunities (Kashdan et al., 2004). In contrast, perceptual curiosity is the state where people are motivated by various sensory-type stimulations. Therefore, people with high levels of perceptual curiosity are impacted by complex sensory stimulation, such as sights or sounds, so that they are willing to seek and have new information (Collins, Litman, & Spielberger, 2004). Collins and his colleagues (2004) argued that epistemic curiosity is the state evoked by "complex ideas or conceptual ambiguities (e.g., scientific theories, intellectual conundrums)" (p. 1127). Therefore, people aroused by epistemic curiosity may have the desire to obtain knowledge (Rossing & Long, 1981).

Other researchers focused on the distinction between trait curiosity, reflecting an individual's typical behavior, and state curiosity, which reflects the situation's effect on behavior (Weinberg & Gould, 1999). It is important for researchers to understand that some individuals will be naturally curious across a variety of situations, while certain situations may influence curiosity even for those who are not naturally more curious. Because sport contexts are the place in which various types (e.g., sensory or cognitive) of information and stimulation exist, and heterogeneous individuals would become the most identified cohort (Park, Mahony, & Kim, 2011), the concept of curiosity may play an important role in explaining various consumer behaviors in a sport context.

Table 1
Berlyne's concept of curiosity in a sport context (Park, 2007, p. 58).

	Perceptual	Epistemic
Specific	**Specific perceptual** Fan's searching for exciting action in a specific sport	**Specific epistemic** Fan's searching for the answer to a particular question about a specific team/player
Diversive	**Diversive perceptual** Fan's exploration in sport facility or stadium with no particular purpose	**Diversive epistemic** A bored sport fan's flipping through sport network channels

2.2. Curiosity knowledge gap

Hebb's (1949) research on the incongruity concept was one of the first systematic examinations of the appropriate level of stimulus to induce curiosity. Hebb generated an *optimal level of stimulation* theory and asserted:

> "in most sensory modes there is an intensity limit at which avoidance appears. Below this point the stimulation may be sought out – that is, it is 'pleasant'; above it, the same kind of stimulation produces avoidance and, if the avoidance is unsuccessful, behavioral disturbance" (p. 182).

Berlyne (1954, 1960) also introduced an optimal stimulation theory for exploratory behavior. Berlyne (1960) asserted that the optimal level of arousal is most pleasing to the organism (Collins, 2000) and results in exploratory behavior. Conversely, when arousal is less or higher than the optimal level, the organism would perceive it as an unpleasant stimulus. Therefore, if the level of arousal is too low, there will be no motivation to explore, while if the level is too high, it will result in anxiety (Borowske, 2005). Berlyne's theory of optimal stimulation was later supported by Day's (1982) "zone of curiosity." According to Day, the individual might fall into the "zone of anxiety" if there is too much uncertainty. Similarly, too little stimulation or information would place people in the "zone of relaxation," because their interests would not be aroused. On the other hand, people might be in the 'zone of curiosity' if there is an optimal level of stimulation.

One recent theory related to the optimal level of curiosity is the curiosity knowledge (or information) gap model. In 1994, Loewenstein argued that exploratory behavior would increase when manageable levels of a knowledge gap existed; knowledge gap refers to the difference between what people know and what they want to know (Menon & Soman, 2002). Loewenstein integrated and summarized existing curiosity theories and proposed a new model for psychological curiosity (Bernard & Schulze, 2005). He defined curiosity as an induced imbalance from a perception gap in knowledge or understanding (Bernard & Schulze, 2005). Loewenstein insisted that "the intensity of one's curiosity directed to a particular item of information is related positively to its ability to resolve uncertainty" (p. 88), and therefore, people expose themselves voluntarily to curiosity-arousing stimuli. He believed that curiosity could be an important factor in generating and managing knowledge gap; the important basis for Loewenstein's knowledge gap model is the notion of a manageable gap in one's knowledge. Motivation to engage in exploratory behavior increases when people perceive a gap between their current knowledge level and a desired knowledge state (Gentry et al., 2001). Awareness of this knowledge gap produces an aversive feeling of deprivation or discomfort that can be reduced only by obtaining the information needed to fill the gap.

Gentry et al. (2001) partially investigated the effect of the knowledge gap on the exploratory behavior of students in university, high school, and middle school classes. They provided recommendations concerning how experimental class exercises can narrow the knowledge gap to improve student learning and behavior. In a later study, Menon and Soman (2002) examined Internet advertising using three levels of the knowledge gap and found that more curiosity can be generated for Internet advertising when the knowledge gap is moderate than when it is either high or low. Moreover, they found that generated curiosity results in a number of positive behaviors related to the product being advertised (e.g., greater information search, product interest). Thus, it was concluded that a moderate curiosity knowledge gap increases individuals' desire to engage in exploratory behavior to satisfy their curiosity and fill the gap by learning about and searching for a new product. Their findings empirically supported Loewenstein's (1994) arguments and laid a theoretical foundation for examining the curiosity knowledge gap related to sport consumer behaviors.

2.3. Sport consumer research and curiosity in the sport context

In the sport context, many studies have examined how consumers are motivated and influenced to become sport consumers in order to better understand their attitudes and behaviors towards certain sports, teams, and players. These studies have found a variety of factors impacting consumers' decisions to attend games or watch them on television (Funk & James, 2001; Funk, Mahony, & Ridinger, 2002; Kahle, Kambara, & Rose, 1996; Mahony, Madrigal, & Howard, 1999; Milne & McDonald, 1999; Mullin, Hardy, & Sutton, 2000; Sutton, McDonald, Milne, & Cimperman, 1997; Trail & James, 2001; Wann, Tucker, & Schrader, 1996; Zhang, Lam, Bennett, & Connaughton, 2003). While the majority of current consumer behavior studies in a sport setting have focused on highly identified sport consumers, little research has investigated the process by which individuals become sport consumers and what factors initially attract one to consume sport and fundamentally motivate sport consumers (Park et al., 2008). In addition, while these studies have focused on a number of motivational factors, curiosity has not been a major focus in this line of research. Because curiosity is a strong motivational drive for human behavior (Berlyne, 1960, 1971), it could be an important motivational factor that explains how individuals are initially attracted to a sport or sport team. However, only a few studies have been conducted to examine the impact of curiosity on various sport consumer behaviors (Park et al., 2008, 2011).

In a study of Internet advertisements, an optimal level of the knowledge gap has been found to motivate people to examine the information needed to close the gap and to engage in exploratory behavior related to the object of curiosity (Menon & Soman, 2002). Based on prior research, it is believed the knowledge gap can affect one's generated curiosity in a sport setting, which may then influence fan motivation to watch the novel sport (Loewenstein, 1994; Park, Kim, Park, & In, 2009). Consequently, one of the primary purposes of this study was to investigate the impact of the level of the knowledge gap on generated state curiosity and the consumer's intention to watch a novel sport. Generated state curiosity is defined as how interesting a curiosity-arousing situation is to individuals (Cyr, 1996; Naylor, 1981) and is meaningful in the sport

context because various sport consumer behaviors can be influenced by environmental situations that are strongly related to state curiosity (Park et al., 2008; Park & Kim, 2008). Given that the sport context may yield a state curiosity-aroused situation and increase its influence over individual traits, it is important to examine curiosity in the sport context and the influence of the different levels of knowledge gap, something that could be manipulated by marketers. Thus, this research aims to investigate the relationships between the level of knowledge gap, generated curiosity, and sport consumer behaviors by extending the research of Menon and Soman (2002) in a sport setting. The following hypotheses were formulated:

H1. A moderate knowledge gap will result in a higher level of generated state curiosity than either low or high knowledge gap.

H2. Generated state curiosity will significantly influence the intention to watch the novel sport.

H3. The generated state curiosity will positively mediate the relationship between the knowledge gap and the intention to watch the novel sport.

While one could question the use of intention to measure the participants' consumption behaviors, literature on curiosity in the sport context has mainly used it to measure exploratory behaviors. Even though there might be some gaps between individuals' intentions and their actual behavior, using 'intentions' for this study is justified based on the following reasons. First, the literature on consumer behaviors (Ajzen, 1985, 1991; Fishbein & Ajzen, 1975; Griffeth, Hom, & Gaertner, 2000; Hagger, Chatzisarantis, & Biddle, 2001, 2002) found that intentions are one of the most important predictors of actual behaviors. For example, Ajzen (1991) argued that "intentions are assumed to capture the motivational factors that influence behavior; they are indicators of how hard people are willing to try, of how much effort that they are planning to exert, in order to perform the behavior" (p. 181). Similarly, Griffeth et al. (2000) and Hagger et al. (2002) found that individuals' intentions served as a significant predictor of actual behavior. Second, considering the popularity of the novel sport in the US used in this study, sport consumers would have great difficulty watching the sport on TV or actually experiencing the sport (cf. Mahony & Howard, 2001). Therefore, it would be reasonable for the authors to use intentions to measure participants' consumption behaviors.

3. Method

The primary goal of this study was to examine the impact of the level of the knowledge gap on generated state curiosity and the consumer's intention to watch a novel sport. In addition, the current study examined whether generated state curiosity mediates the knowledge gap's impact on behavioral intentions. In order to fulfill the purposes, the authors developed the printed advertisements with the three levels of the knowledge gap, and participants ($N = 60$) evaluated the manipulated advertisements in a pilot test. Data were then collected ($N = 210$) from a large urban university in the Midwest in the U.S. to test the hypotheses (Study 1). Given that the study of curiosity in the sport context is limited, and no prior attempt has been made to investigate the influence of the knowledge gap in the sport marketing context, the authors collected new data ($N = 237$) and used a different scale (Study 2) for the cross-validation to increase the generalizability of the findings (Byrne, 2009). This study constitutes a meaningful step in illuminating factors that may influence the behavior of sport consumers and better understanding the concept of curiosity in the sport context.

3.1. Pilot test: pretest of the advertisements and manipulation check

Given that no research has been done in sport utilizing simulated advertisements to manipulate the knowledge gap, a pilot study was used to test advertisements that would generate different levels of curiosity. To manipulate the knowledge gap, three advertisements for the novel sport, Taekwondo, were developed. Even though Taekwondo is one of the Olympic sports, it is still new in the US (Ko, Kim, & Park, 2007), and Taekwondo also had the second lowest number of fans among ten novel sports in the previous study (see Park et al., 2008). While one could examine the impact of the knowledge gap on consumer behavior in a number of sports, novel sports seem particularly well suited for such an examination. Respondents are less likely to have much information on these novel sports and their curiosity can be more easily manipulated. Additionally, the use of the novel sport may provide practical implications for new sports on becoming more successful in the competitive marketplace. Therefore, the focus on a novel sport in this study is appropriate.

The first advertisement contained a basic image of Taekwondo. There was no information provided on the name, philosophy, or rules of the sport (high knowledge gap). The high knowledge gap is where there are no "clues to interpret the presented information" so it is less likely to lead to curiosity and "active elaboration" (Menon & Soman, 2002, p. 3). The second advertisement provided clues that the sport is Taekwondo and briefly explained the philosophy and spirit of Taekwondo (moderate knowledge gap). In this case, the advertisement provided additional information or "cues" that are more likely to lead to generate hypotheses "by linking new information with existing knowledge" (Menon & Soman, 2002, p. 3). The third advertisement explained the philosophy of Taekwondo and also introduced the basic rules and the levels of grading (low knowledge gap). In this case, the information provided was so detailed that there was little chance for additional information to be sought due to curiosity.

Using a convenience sample of 60 students from a large urban university in the Midwest U.S., participants were randomly assigned to one of the three different groups. Participants in each group saw one of the three versions of the advertisement (high, moderate, or low knowledge gap). In order to examine how precisely the researcher manipulated knowledge gap, participants were asked one question related to the amount of information (i.e., "How much knowledge is provided by this advertisement?"), measured using a 7-point Likert-type scale ranging from 1 (None) to 7 (Very Much).

A one-way ANOVA was then performed in order to compare the advertisements, and the results revealed that there were significant differences between the advertisement simulations: $F(2, 57) = 18.12$, $p < .001$. The Bonferroni post hoc test confirmed that there were significant differences between the moderate knowledge gap advertisement ($M = 4.15$) and both the high ($M = 2.95$) and the low knowledge gap ($M = 5.25$) advertisements. In sum, the advertisements used in this study were successful in manipulating the variable of information and were adopted for use in the two studies without modification.

3.2. Study 1

3.2.1. Instrument

The successfully manipulated advertisements were used for the first data collection. To measure generated state curiosity, the following questions were utilized: (1) "How curious do you feel about this sport?," (2) "How likely would you be to watch this sport?," and (3) "How much do you want to know about sports?" These questions were measured on a 7-point Likert-type scale ranging from 1 (Not at all) to 7 (Very much). To measure the behavioral intention, a series of three questions was used (e.g., How likely would you be to watch this sport if it is televised in the future?). These questions were also measured on a 7-point Likert-type scale ranging from 1 (Not at all) to 7 (Very much).

3.2.2. Procedures and sample

The respondents were 210 university students from a large urban university in the Midwest in the U.S. The participants were randomly recruited and there were 84 females (40%) and 126 males (60%) (see Table 2). The participants were randomly assigned to one of the three different groups and then performed two tasks. First, the participants saw one of the three versions of the simulated advertisements (high, moderate, and low knowledge gap). Second, the participants completed items on the behavioral intention to watch the sport and the state curiosity generated by the advertisement.

3.3. Study 2

A second data collection was conducted in order to (a) examine the hypotheses with a different sample (i.e., sport consumers), and (b) use a different measure of curiosity in a sport setting. Because there has been no study on the

Table 2
Descriptive statistics for the demographic variables.

Variables	Category	Group	Group 1 (Low)		Group 2 (Moderate)		Group 3 (High)	
			N	%	N	%	N	%
Gender	Male	MC[a]	12	60	13	65	11	55
		Study 1	42	60	43	61.4	41	58.6
		Study 2	35	44.3	44	55.7	36	45.6
	Female	MC[a]	8	40	7	35	9	45
		Study 1	28	40	27	38.6	29	41.4
		Study 2	44	55.7	35	44.3	43	54.4
	Age (Mean)	MC[a]	18.2		18.2		20.5	
		Study 1	22.3		22.2		23.2	
		Study 2	33.4		36.5		36.4	
Ethnicity	African American	MC[a]	4	20	0	0	7	35
		Study 1	18	25.8	10	14.2	18	25.7
		Study 2	8	10.1	6	7.5	13	16.4
	Asian	MC[a]	0	0	1	5	1	5
		Study 1	0	0	0	0	0	0
		Study 2	9	11.4	4	5.1	4	5.1
	Caucasian	MC[a]	15	75	18	90	12	60
		Study 1	51	72.8	58	82.9	50	71.4
		Study 2	42	53.2	56	71	42	53.2
	Hispanic	MC[a]	1	5	1	5	0	0
		Study 1	1	1.4	2	2.9	2	2.8
		Study 2	14	17.7	12	15.2	7	8.9
	Other	MC[a]	0	0	0	0	0	0
		Study 1	0	0	0	0	0	0
		Study 2	6	7.6	1	1.2	13	16.4

[a] Manipulation check.

relationship between the curiosity knowledge gap and sport consumers' spectatorship, it is believed the use of different samples in two separate, but related, analyses could provide stronger evidence of applicability and generalizability of the findings (cf. Byrne, 2009; DeVellis, 2003).

3.3.1. Instrument

Because the questions used to measure generated state curiosity in Study 1 were focused solely on how the participants felt about the advertisements, the participants in Study 2 completed three items from the Sport Fan Specific Curiosity Scale (SFSCS; Park, 2007). Based on the literature (e.g., Kashdan et al., 2004; Litman & Spielberger, 2003; Naylor, 1981; Pearson, 1970), the SFSCS was developed to measure sport fans' state curiosity to seek new, general, and specific information. The SFSCS consists of three major factors (Specific Information, General Information, Sport Facility Information) with a series of 11-items. Because the stimuli given to the participants are specific information, the authors used three items for Specific Information (e.g., I often spend time examining statistics about my favorite team). To measure the behavioral intention, the same three questions from Study 1 were also used in Study 2. Again, these questions were measured on a 7-point Likert-type scale ranging from 1 (Not at all) to 7 (Very much), and the manipulated advertisements were used as well.

3.3.2. Procedures and sample

The respondents in Study 2 were 237 professional football spectators in the Midwest in the U.S. They consisted of 122 females (51.5%) and 115 males (48.5) (see Table 2). As was the case in Study 1, the participants were randomly assigned to three different groups and then performed two tasks. First, the participants saw one of the three versions of the simulated advertisements (high, moderate, and low knowledge gap). Second, the participants completed items on the behavioral intention to watch the sport and the state curiosity generated by the advertisement.

3.4. Statistical analyses

A chi-square test was used to examine if the three groups with the different levels of the knowledge gap were significantly different from each other in terms of demographics. The results showed no overall group differences on demographics ($\chi^2(14) = 21.84$, $p > .05$). One-way ANOVAs and multiple regressions were also employed to test H1 and H2, respectively. In order to examine the indirect effect of the knowledge gap on intention through and mediated by generated curiosity (H3), structural equation modeling (SEM) method was used. To assess multivariate normality, Mardia's (1985) multivariate skewness and kurtosis coefficients were examined. Multiple criteria, such as average variance extracted (AVE), incremental fit index (CFI), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA), were used to examine psychometric properties of the model (Bagozzi & Yi, 1988; Fornell & Larcker, 1981; Hair, Black, Babin, & Anderson, 2009).

4. Results

4.1. Direct relationships between knowledge gap and generated curiosity (H1) & generated curiosity and intention (H2)

The mean generated state curiosity scores for the three groups were 4.20 (high knowledge gap, $SD = 1.45$), 5.21 (moderate knowledge gap, $SD = 1.30$), and 4.42 (low knowledge gap, $SD = 1.23$) (Study 1); 4.4 (high knowledge gap, $SD = 1.6$), 5.3 (moderate knowledge gap, $SD = 1.2$), and 4.2 (low knowledge gap, $SD = 1.7$) (Study 2). The mean behavioral intention scores for each group were 4.14 (high knowledge gap, $SD = 1.34$), 5.00 (moderate knowledge gap, $SD = 1.11$), and 4.40 (low knowledge gap, $SD = 1.00$) (Study 1); 3.8 (high knowledge gap, $SD = 1.4$), 4.6 (moderate knowledge gap, $SD = 1.1$), and 3.40 (low knowledge gap, $SD = 1.5$) (Study 2).

H1 predicted that a moderate knowledge gap would result in a higher level of generated state curiosity than either low or high knowledge gap. The results of ANOVAs indicated that there were significant differences between groups on generated state curiosity, $F(2, 207) = 11.14$, $p < .001$ (Study 1); $F(2, 234) = 9.86$, $p < .001$ (Study 2). Following the significant result for the three groups, the Bonferroni post hoc tests indicated that generated state curiosity was significantly greater after viewing the advertisement containing moderate knowledge gap as opposed to after viewing the high or low knowledge gap advertisements both in Study 1 and Study 2. Therefore, H1 was supported (Table 3).

H2 investigated the direct relationship between generated curiosity and intention to watch the sport, and the results of multiple regressions reported that generated curiosity was a significant predictor of the intention to watch: $F(1, 208) = 121.86$, $p < .001$ (Study 1); $F(1, 235) = 25.78$, $p < .001$ (Study 2). Generated curiosity explained 37% (Study 1) and 10% (Study 2) of the variances in the intention. Therefore, H2 was supported (Table 4).

4.2. Mediation effect of generated curiosity on the relationship between knowledge gap & intention (H3)

H3 examined the mediation effect of generated curiosity on the relationship between knowledge gap and intention. In order to investigate the indirect effect of the knowledge gap on the intention through and mediated by generated curiosity, structural equation modeling (SEM) method with Mplus7 was employed using the data from the participants in Study 2 ($N = 237$).

Table 3
Direct relationships between knowledge gap and generated curiosity (H1).

Source			Study 1				Study 2	
			df	F			df	F
Generated curiosity	Between groups		2	11.14[**]	Between groups		2	9.86[**]
	Within groups		207		Within groups		234	
Source	Level			Mean difference	Level			Mean difference
Generated curiosity	1	2		−1.01[**]	1	2		−1.03038[*]
		3		−.23		3		−.13
	2	1		1.01[**]	2	1		1.03[*]
		3		.79[*]		3		.90[*]
	3	1		.23	3	1		.13
		2		−.79		2		−.90

[*] $p < .05$.
[**] $p < .001$

Table 4
Direct relationships between generated curiosity and intention (H2).

Variable	Study 1					Study 2				
	B	SE(B)	β	t	F	B	SE(B)	β	t	F
Generated curiosity	.53	.05	.61	11.04	121.86[**]	.26	.05	.31	5.10	25.78

[**] $p < .001$.

4.2.1. Measurement model

As addressed previously, three items for 'Specific Information' of Sport Fan Specific Curiosity Scale (SFSCS; Park, 2007) and an additional three items measuring Behavioral Intentions were used to examine the mediation effect of Generated Curiosity on the relationship between knowledge gap and Behavioral Intention in the measurement model. To assess the psychometric properties of the scales, a confirmatory factor analysis (CFA) was conducted using Mplus7. The maximum likelihood methods were used for the model estimation. The normalized Mardia's coefficient of skewness and kurtosis indicated a violation to the multivariate normality assumption. Consequently, the Satorra and Bentler (1994) scaling method was adopted. The Satorra-Bentler scaled χ^2 (S-B χ^2) statistic has been shown to be robust to the violation of the normality assumption (Bentler & Yuan, 1999; Curran, West, & Finch, 1996). Accordingly, to conduct χ^2 difference tests, the S-B χ^2 was adjusted using the formula from Satorra and Bentler (2001).

CFI values greater than .95 are indicative of good-fitting models and SRMR values of .08 or less are desired (Hu & Bentler, 1999). RMSEA values of less than .05 indicate good fit, values of .08 or less would indicate reasonable fit and values higher than .10 indicate poor fit (Browne & Cudeck, 1993). Hu and Bentler suggested that values less than .06 should be considered to indicate that a model has a good fit.

The measurement model fit the data well (S-B $\chi^2/df = 15.00/7 = 2.14$, CFI = .99, SRMR = .02, RMSEA = .08). Raykov's structural equation modeling (SEM) method (Raykov, 1997, 2001) was used rather than the more widely used Cronbach's coefficient alpha (α; Cronbach, 1951) to assess scale reliability. Raykov's method is considered to yield a less biased estimate than Cronbach's coefficient alpha in all types of measurement models except for the essentially τ-equivalent model (Graham, 2006). All factor loadings were significant in the predicted direction ($p < .001$; loadings ranging from .60 to .94). Reliability coefficient for generated curiosity and intention were .94 and .69 respectively. The average variance extracted (AVE) values for both generated curiosity (.81) and intention (.57) were greater than .50. Thus, the measures demonstrated good convergent validity and reliability (Hair et al., 2009). Discriminant validity was examined for each construct by performing multiple χ^2 difference tests of unity between all pairs of constructs. The unconstrained model (correlation estimated freely) was significantly better than the constrained model (correlation between a pair of latent factors constrained as 1) in all comparisons. In aggregate, the results indicated that the measures possess adequate psychometric properties.

4.2.2. Simultaneous equations model

The hypothesized model was tested using a simultaneous equations model approach. The overall fit measures of the simultaneous equations model indicate good fit of the model to the data (S-B $\chi^2/df = 15.00/7 = 2.14$, CFI = .99, SRMR = .02, RMSEA = .08). Support for all hypothesized relationships was found (Fig. 1). Knowledge gap positively affected generated curiosity ($\gamma = .31$, $p < .01$). In addition, the generated curiosity positively influenced intention ($\beta = .86$, $p < .01$).

With respect to the mediating role of generated curiosity, the results supported H3. First, the knowledge gap significantly influenced generated curiosity, which in turn significantly affects the intention. Next, the indirect effect of the knowledge gap ($\gamma = .27$, $p < .01$) on the intention was significant as well. These results indicated that the effect size of the mediated paths is greater than the direct paths. Finally, the direct effect of the knowledge gap on the intention was not significant
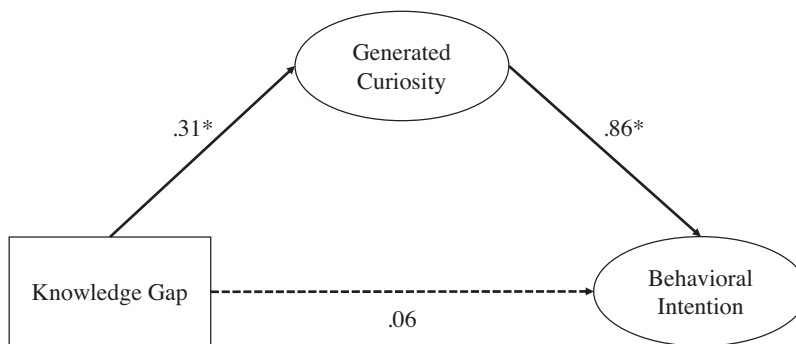
Fig. 1. Hypothesized simultaneous equation model.

($\gamma = .06$, $p > .05$). Taken together, the results indicated that generated curiosity fully mediates the influence of the knowledge gap on the intention. Overall, the predictors in the hypothesized model collectively explained 78% of the variance in the intention.

5. Discussion

The purpose of this study was to investigate the impact of the level of the knowledge gap on generated state curiosity and behavioral intentions and the impact of generated state curiosity on behavioral intentions in a sport setting, based on the work of Menon and Soman (2002). Using simulated advertisements, the study found that the moderate level of the knowledge gap in sport advertisements influenced generated state curiosity. Generated state curiosity resulting from viewing the advertisements further affected the intention to watch the novel sport. Finally, the results of both studies supported the hypothesis that generated state curiosity fully mediates the relationship between the knowledge gap and the intention to watch. Therefore, the results of the current study indicate manipulating the knowledge gap (i.e., moderate knowledge gap) may indirectly influence sport consumer behavior, with generated state curiosity acting as a mediator. The fact that the same results were found using different samples and different measures of generated state curiosity further strengthened the support for the relationships discussed in this paper.

The findings of this study are important for both researchers and practitioners. For researchers, the findings support theories related to knowledge gap (Berlyne, 1954, 1960; Day, 1982; Loewenstein, 1994). The results indicated that a moderate knowledge gap significantly increases generated state curiosity, which then influences behavioral intentions. Thus, this study supports the predicted 'inverted-U shape relationship' between the level of knowledge gap and sport consumer behaviors.

Second, this finding provides support for further examining the impact of the construct of curiosity and related theories in order to better understand sport consumer behavior. While curiosity could be the key to increase "the effectiveness of decision-making" (Harvey, Novicevic, Leonard, & Payne, 2007, p. 45) and influence individuals' various behaviors (Reio, 1997), research on the effect of curiosity on sport consumer behavior is still in its early stage. In this study, the authors extended the research on curiosity into sport and found that generated state curiosity was a significant motivator influencing the intention to watch the advertised sport. Thus, from this study, it could be hypothesized that sport consumers with highly generated state curiosity would be willing to spend more time seeking information about the sport and to watch more games as compared to those with lower state curiosity. This is consistent with Loewenstein (1994) who argued that the primary effect of curiosity is to motivate people to search for information and engage in exploratory behavior in order to "resolve uncertainty" resulting from the knowledge gap (p. 88). Therefore, the findings of this study successfully extended the work of Menon and Soman (2002) into a sport setting and may help researchers extend their understanding of sport consumer behavior from the existing literature into a new area.

For practitioners, the findings in this study may reveal the need for new marketing strategies. This study suggests that sport marketers may need to offer information or advertising that presents a moderate knowledge gap to individuals who are not currently consumers of a sport. If a moderate level of knowledge gap were presented, individuals would be more likely to seek information to fill the gap between what they know and what they want to know (Loewenstein, 1994). This search for knowledge could result in increased attendance at sporting events and larger television audiences.

Given most sport consumers use various types of media (e.g., TV or Internet) for obtaining sport-related knowledge, sport marketers should explore integrated media strategies based on the relationship between levels of media consumption and levels of the knowledge gap. For example, even if the individuals (A, B, C in Fig. 2) are manipulated by some advertisements so that they are in the 'Zone of Curiosity,' their reaction to the information given may differ based on their levels of media consumption. For instance, the individual 'A' (in Fig. 2) would move to 'Min 1′ and stay in the 'Zone of Anxiety' if she/he has a low level of media consumption that prevents her/him from obtaining a moderate level of information. Those showing a low level of media consumption may not have enough chances to obtain information or knowledge on the subject that arouses their curiosity. In contrast, the individual 'C' (in Fig. 2) would move to 'Min 2′ and stay in the 'Zone of Relaxation' if she/he has
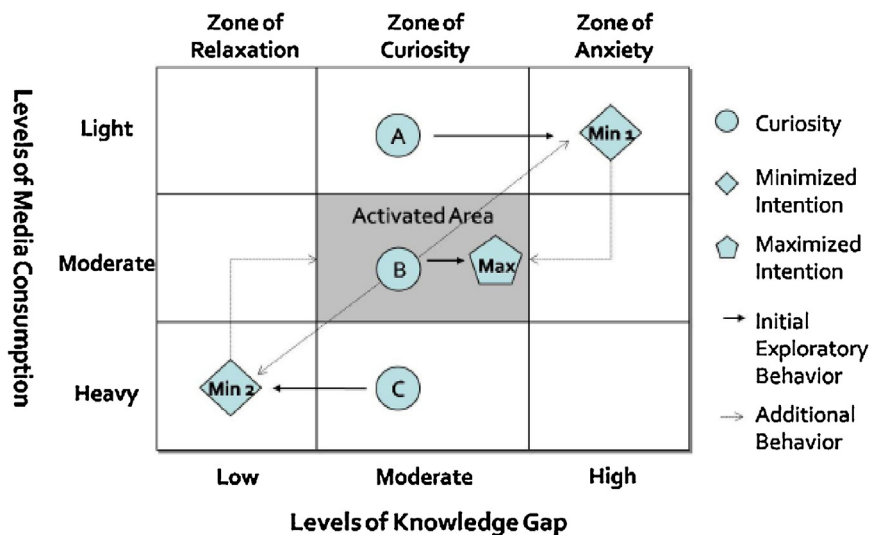
Fig. 2. Relationship between levels of knowledge gap and media consumption (Park et al., 2009).

a high level of media consumption that provides the individual with some chances to seek out the information about the subject. Those having a high level of media consumption may fill the gap between what they know and what they want to know with little difficulty or feel informational entropy that yields some tiredness. As compared to the individuals 'A' and 'C', however, the individual 'B' (in Fig. 2) would stay in the 'Zone of Curiosity' if she/he has a moderate level of media consumption that maximizes exploratory behaviors (Loewenstein, 1994).

Therefore, sport marketers need to understand the relationship between knowledge gap and media consumptions and prepare different strategies for each individual. For example, for the individual with low media consumption, sport marketers may need to increase the amount of information and offer it to the individual through the media with which she/he might be familiar. Sport marketers may be able to help the individual move to 'Activated Area' from 'Min1' by continually stimulating her/his level of arousal. For the individual with high media consumption, the key is to find new advertisement options and then create unique advertisements and creative presentations of information that are distinguished from other information and means of delivery (Park et al., 2009).

Second, using the marketing strategies on the basis of state curiosity-arousing content would be more convenient, more effective, and have the potential to offer pragmatic ways of increasing sport consumers' behavioral intentions than other types of curiosity (cf. Loewenstein, 1994; Park et al., 2008). For example, while trait curiosity is stable, state curiosity varies over time and is more easily manipulated by advertisements. Therefore, various behaviors, such as purchasing sporting goods in a sport venue, watching a sport event on the television, or attending a game in a stadium, may be influenced by situational factors unique within sport (Park et al., 2008). In addition, Loewenstein (1994) insisted that a better understanding of state curiosity offers more practical implications to stimulate curiosity in the broader population. Therefore, sport marketers need to use this concept of state curiosity while promoting sport.

Third, the results of this study may help marketers of novel sports draw more consumer interest. Novel sports are often struggling to expand consumer base and increase consumer interest (Mahony & Howard, 2001). For example, Taekwondo is considered a novel sport, as the recognition of this sport was very low in a previous study (see Park et al., 2008). However, the overall intention to watch the sport was moderately high in this study (see Table 2). Therefore, it appears that when advertisements generate the optimal level of curiosity, it is possible for sport marketers to attract consumers to sports that generally do not elicit a lot of interest. By appealing to consumers' curiosity, and maintaining it based on the manipulation of the knowledge gap through marketing and promotions, sport marketers would be able to attract new sport consumers and may be able to maintain their interest.

6. Limitations and future research directions

Because the manipulated information used for this study are paper type advertisements, the authors did not examine the relationships between the knowledge gap, generated state curiosity, and sport consumers' intention to watch novel sport when it is delivered via a variety of media. It is also important to take a look at the relationship between sport consumer's intended behavior and actual exploratory behavior based on the impact of advertising. Even though the findings of this study found that the moderate knowledge gap arouses sport consumer's intention to watch novel sports, the authors did not examine how their intended behavior translated into a real exploratory behavior.

Additionally, this study does not give a clear explanation of the effect of advertising on the both generation of curiosity and curiosity-knowledge-gap theory. For example, the current study held the image constant while manipulating the

information provided to the participants. It is possible that different images may be more or less effective at generating curiosity, particularly in a sport setting, so future studies should examine the impact of various combinations of words and images on generated curiosity. In addition, while one might assume that this research would only be applicable to novel sports, future research should examine the potential applications to more established sports. In the more established sports, it may be possible to focus on a new feature (e.g., new player, new rule) to generate curiosity. Research could also examine how effective these established sports are in generating curiosity with this approach when compared to the novel sports. Overall, additional research would be helpful to better understand how, when, and in what conditions manipulating the knowledge gap would be most effective.

Research on how sport consumers react to novel stimuli or curiosity-arousing stimuli after their curiosity is satisfied is also worth pursuing. Further study can be undertaken by using Loewenstein's (2000) two different types of altered personality states related to curiosity: (a) 'hot' state and (b) 'cold' state. The hot state is the state of anticipation when people cannot judge the situation rationally because of the curiosity or emotional disequilibrium. In contrast, the cold state is the state of tranquility in which individuals' curiosity is satisfied. Understanding of these concepts may help sport marketers develop appropriate alterations to their marketing strategies at appropriate times in order to continually maintain consumer interest (i.e., keep fans in a "hot" state) and arouse curiosity in their respective sports. In addition, controlling sport consumers' identification with novel sports is also meaningful to better understand the relationship between curiosity and sport fan identification. For example, highly identified sport consumers would consume novel sports differently because they have shown different consumption behaviors from those who have no or low level of identification (Mullin et al., 2000; Sutton et al., 1997; Trail & James, 2001; Wann et al., 1996). The results of the current study suggest that an increased understanding of the impact of curiosity on sport consumers may be useful to both practitioners and researchers, but more work is still needed.

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