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Abstract

The purpose of this study was to examine the extent to which environmentally themed activities within an intercollegiate sport context impact fan engagement. A total of 557 fans responded to an online survey measuring fan connection to the athletic department, environmental values, expectations for environmental activities, event and at home environmental behaviors, perceptions of profile enhancement, and recall of environmental sponsors and major initiatives. Results found that fans expected athletic department environmental action and they help with favorable perceptions about the athletic program and university and influenced at event and home behaviors. Cluster analysis identified two clusters based on high pro-environmental and low pro-environmental perceptions. The high pro-environmental cluster was skewed female, had lower connection to the athletic program, and had higher recall of official environmental sponsors and athletic initiatives. The results provide a fundamental and foundational understanding of how environmental activities impact fan engagement and the value of such efforts.

Keywords: *Environment, intercollegiate athletics, fan behavior, cluster analysis*

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Sport organizations in the United States are incorporating environmental initiatives in their operations (Casper et al., 2012; Trendafilova et al., 2013). This momentum has led to collegiate athletics department efforts to make their athletic programs more sustainable and national environmental organizations are joining the efforts. As a result, intercollegiate athletics witnessed the United States Environmental Protection Agency leading the College Sport Sustainability Summit; and the combination of the Green Sport Alliance and Association for the Advancement of Sustainability in Higher Education (AASHE) partnering to better educate higher education sustainability professionals about sport-specific initiatives (Casper & Pfahl, 2015). The Natural Resources Defense Council (NRDC) partnered with the NCAA and several professional leagues to develop a better understanding of how their operations impact the natural environment and also to aid in developing strategies to address environmental concerns (see NRDC, 2013). One such example is the NRDC's greening advisor, which assists sport organization personnel with steps to take to address environmental issues from strategic planning through measures of success.

However, despite these advances, less is known of the impact sport organization-led environmental efforts have on their fan base (e.g., perception of organization, personal behavior change). Research into corporate social responsibility (CSR) efforts, such as environmental fan engagement initiatives, shows that it influences organizational value (Babiak & Trendafilova, 2011; Trendafilova et al., 2013). However, the continuing need to accrue a baseline of information and data about fan-centered current views and practices is important. Investment in CSR efforts are linked with, but separate from, traditional marketing efforts, but can foster closer connections between fans and sport organizations and events, which are often viewed favorably by fans (Gidwani, 2013). To date, few empirical studies sought to understand if event-based environmental efforts are warranted and meet desired goals and objectives, a key part of determining return on investment.

At the strategic level, Casper and colleagues (2014) noted that athletics department personnel can leverage the educational and intercollegiate context (i.e., overall university mission) to encourage changes in fan behavior across a variety of norms and values (e.g., fandom, civic duty). Focusing on green games/events, the low level of awareness about the green game examined in their study highlighted the need to have increased communication efforts surrounding environmental activities as an active part of pregame messaging. The game itself needs to have a game presentation that is markedly different from other games (e.g., maximize the green themed uniqueness through various activation points). The data in their study showed a majority of fans expected environmental actions from the athletic department personnel, so the challenge is to provide clear and engaging green interactivity with fans that reach beyond just those fans with high levels of environmental values. Further, Jin, Zhang, Pitts, Connaughton, Swisher, Holland, and Spengler (2015) examined the linkages between projects to green stadia

in intercollegiate athletics and donations for such efforts. Their findings showed "respondents had positive donation beliefs, recognition beliefs, and control beliefs relating to GSI [green stadium initiatives] donation" (p. 49), but displayed a negative normative belief overall, which the authors described as potentially resulting from past/present environmental action (or inaction) on the part of athletics department personnel (i.e., trust) (see also Jin, Mao, Zhang, & Walker, 2011).

These early research efforts into environmental activities tied to general fandom (e.g., norms, values, emotional bonds) show that environmental activities can help to drive behavioral change among fans at home and at events, which in turn can drive other strategic considerations (e.g., closer fan relations, profitability, sponsorship) beyond only CSR-related outcomes. Thus, while the actual environmental activities and actions will vary among sport organizations, they are not separate from the overall need to examine the environmental impact of their operations and take action (McCullough & Cunningham, 2010; Trail, 2015, 2016). To this end, the purpose of this study is to examine the extent to which environmentally themed activities affect fan engagement within an intercollegiate sport context.

This was done by examining issues such as how well environmental efforts meet fan expectations, help with positive perceptions of the athletic program, and change or influence behaviors (at events and in everyday lives). A multiperspectivaled framework to fan engagement with environmental issues was developed to accomplish this task. Using Bhattacharya and Sen's (2003) CSR relationships, a combination of individual perceptions, norms, values, and actions structures (Dunlap & Van Liere, 2000; Stern, 2000), and the structural issues inherent within communicating environmental messages to fans (Trail, 2015, 2016), a more robust understanding of fan-level engagement elements with environmental issues was examined. The framework connects organizational issues (e.g., CSR practices and strategies) with ways in which fans access, interpret, and understand/act on them (e.g., norms, values) connected by the communicative elements inherent in the sport organization–fan relationship. Each element in this framework connects theoretical aspects of fan engagement and environmental issues with applied ways in which sport personnel have already connected with fans regarding this issue and future ways in which this work can begin, continue, and improve in its effectiveness.

Conceptual Framework for the Study

Understanding fan engagement with any issue, let alone environmental issues, is a complex issue with many interconnected elements. In order to address the the study's purpose, it was necessary to develop a complicated but clearly linked framework of analysis. Environmental efforts are in sport are internal and external. The CSR framework is often applied to external efforts as they are intended to engage with fans and drive change (e.g., behavioral change). Combining this prac-

tice with the ways in which fans respond to such efforts is critical to determining the success of the efforts. The conceptual framework that emerges from the literature review in the next section does this within the intercollegiate sport setting.

Sport–Environment Connection for Fan Engagement

As fans begin to understand and to adopt environmental values and behaviors within their overall lives, sport organization personnel can utilize their social position to influence environmental issues and behaviors via sport (Rettie et al., 2012; Stern, 2000). Environmental issues in sport are an established part of sport research and industry practice because conducting sporting events has a measurable environment impact (Casper et al., 2012; Mallen & Chard, 2011). The process of engaging fans with environmental issues is similar to brand strategy in which organization personnel work to foster loyal customers and develop strong relationships with them thus requiring strategic planning to accomplish environmental goals (Bhattacharya & Sen, 2003; Pfahl, 2014). This is especially true since many goals are related to event attendance issues (i.e., fan behavior at the event) (Hart, 1995; Porter & Van der Linde, 1995).

The National Basketball Association (NBA) and Major League Baseball (MLB), for example, utilize green weeks (e.g., NBA green week is in April) where green-themed activities are conducted in arenas and ballparks often in conjunction with strategic partners/stakeholders (e.g., NRDC) in order to reach fans in an active manner. Rather than wait for fans to search for environmental information, league events actively put the issue in the spotlight of their games with the intention of continuing the messaging and engagement throughout the rest of the year in different ways. However, this study focuses on intercollegiate athletics in which athletics department personnel are beholden to university or college mandates as part of their strategic planning. Athletics department internal efforts, alongside external ones (e.g., CSR), are increasingly connected to university or college missions and mandates. With more university and college personnel making environmental concern a campus concern, athletics department personnel are drawn into the discussion and are increasingly required to act according to the overall mission goals (American Colleges and University Presidents' Climate Commitment, 2013; Casper & Pfahl, 2015; Casper, Pfahl, & McCullough, 2014; Swearingen White, 2009). Studying the cognitive, affective, and behavioral aspects of fans helps to uncover the ways they make connections with sport organizations and their environmental efforts as done in other contexts (Dunlap & Van Liere, 1978; Dunlap et al., 2000; van Doorn et al., 2010; Yoshida et al., 2014).

Sport Fan Perceptions of Environmental Initiatives

Finding out how fans link perceptions and understandings of environmental actions, both emotionally and cognitively, is an important part of understanding overall success of environmental efforts. Specifically, the various CSR initiatives a sport organization promotes (e.g., breast cancer awareness) engage varying

segments of fans depending on their identity with the cause (e.g., women, those impacted by breast cancer) or the connections between sport organizations and fans (Babiak & Wolfe, 2009; Bhattacharya & Sen, 2003; Peattie, 2010; Rettie et al., 2012). The creation of more experiential ways to engage with environmental issues is crucial to success as with other CSR strategies. As a result, it is necessary to evaluate the foundations of sport fans' receptivity and importance of environmental initiatives to understand the engagement with and connections between fans and the environmental activities of a sport organization (Lin & Huang, 2012; Ottman, 2011; Stern, 2000).

To determine the receptivity of fans to environmental messaging and initiatives, sport managers must understand the beliefs and values of their fans and broader community members in order (Ottman, 2011; Trail, 2015, 2016). Trail (2015, 2016) and Jin et al. (2015) noted people are now expecting deeper commitment on behalf of organizations concerning sustainability and, as a result, expect to see environmental marketing. Further, consumer beliefs and interactions with brands do result in behavioral change including purchasing (Bhattacharya & Sen, 2003). Tying awareness, knowledge, actions, and perceptions related to environmental activities in sport is consistent with Bhattacharya and Sen (2003). Such linkages are necessary to understand the attitudes and beliefs of people towards a sport organization and its CSR efforts (e.g., environmental sustainability) if a sustainable impact on fan behavior is to be achieved (Rettie, Burchell, & Riley, 2012; Ottman, 2011; Stern, 2000).

Fan Segmentation and Fostering Behavior Change: The Next Step

Behavioral change is a key outcome of any attempt to involve fans in activities, environmental or otherwise (Ottman, 2011; Straughan & Roberts, 1999). Within sport contexts, examinations of environmental behavior outcomes are relatively recent (Casper et al., 2012; Mallen & Chard 2011) facilitating an emerging picture of the entire environmental value chain (Casper et al., 2014; Chard et al., 2013; McCullough, 2013). High-profile sport platforms (e.g., green games) do have an impact on awareness, but sport organization personnel must work within their own context to understand the environmental work their organization is capable of doing (i.e., strategy development) (Casper et al., 2014; Pfahl, 2011; Walker, 2013).

As a start, segmentation helps sport organization personnel devise sustainability campaigns, evaluate their effectiveness, and determine the return on investment (monetary, nonmonetary) to the sport organization (Trail, 2016). For example, researchers have demonstrated that female consumers have higher perceptions towards CSR initiatives than males (Hur et al., 2015; Kim et al., 2015). Viewing fans through psychographic and demographic variables and emotional, cognitive, and behavioral reactions to engagement efforts identifies how fans will express their environmental and social concerns by way of their social identity, especially as green (Ottman, 2011; Tajfel & Turner, 1979). However, as Trail and

James (2015) argued, moving beyond traditional segments and metrics is needed to explore the interconnectivity of demographics, geographics, or psychographics, each of which consists of fan subcultures. Further, fan segments form based on shared attributes of subcultures rather than singular characteristics including interactions among subculture members based on sex/gender, education, income, and age (Trail, 2016). To this end, research in this area identified certain segments where responses to environmental sustainability initiatives and messaging are often favorable: education, age, political ideology, place of residence, and to a moderate extent, race and gender (Dietz et al., 1998; Jones & Dunlap, 1992; Kanagy et al., 1994).

Within this sphere, the relationship between gender and environmental concern received more theorized attention than other demographic segments with females generally more concerned than males (Davidson & Frudenburg, 1996; Stern et al., 1993; Stern et al., 1995). Researchers explored several mediating factors for this, including parenthood (Hamilton, 1985), labor-force participation (Blocker & Eckberg, 1997), and ethical socialization (Stern et al., 1995), but not within the sport context.

Social and psychological connections. Social-psychographics, including attitudes, beliefs, values, and other correlates were shown to indicate environmental concern (Stern, 1992) and connection with CSR efforts (Bhattacharya & Sen, 2003). Dietz and colleagues (1998), supported by Ottman (2011), suggest "broad values and attitudes are predictive of specific outcomes (e.g., environmental concern), and it suggests that the most important social psychological factors depend on the type of behavior" (p. 453). That is, depending on the identity of an individual with a sport team, for example, it is reasonable to believe based on the theoretical framework that their identity with a cause (e.g., environmental sustainability) might not be salient and, in fact, overpowered by a competing social identity (e.g., fandom). Further, it is reasonable to assume sport might be used, via fan identification, to educate and influence an individual's beliefs and values that then can positively influence their environmental concern (i.e., environmental identity) (IOC, 2006; McCullough & Kellison, 2016). At the organizational level, McCullough (2013) and others (McCullough & Kellison) suggest that sport managers can leverage fan identification to influence sport fan values and beliefs and be compliant with the sport organization's environmental efforts (e.g., influence individuals to recycle). However, not all attending fans have high levels of identification with the sport organization or team and loyalty (i.e., fan identification) is an influencing element (Trail, 2016).

Intercollegiate Fan Behavior and Environmental Activities

In sum, the literature shows there is a need to understand the influence fan identification and sustainability values have on fan segments to the individual level. There are links between traditional marketing segmentation practices and environmental/CSR efforts that speak to a fan's environmental awareness, knowledge,

and actions. The linkages among these items within sport fans are an important first steps towards understanding the context of and consequences of engaging in environmental activities with fans (Casper et al., 2012).

The literature illustrated the need to understand fans' understandings and perceptions of environmental issues as they are increasingly called to take action at sporting events and in their own lives (McCullough & Cunningham, 2010). This study acts to understand how fans respond to these environmental efforts based on their fan identification and environmental values. The key theoretical areas that emerged from the literature are drawn together to address the contextual challenges of this study. To accomplish this, the following research questions were developed for this study.

1. How do fans perceive environmental actions by the athletic department?
2. Are there identifiable clusters of fans based on environmental-specific constructs?
3. How do fans' clusters differ based on awareness of the athletics department's commitment to environmental sustainability, awareness of the athletic department's sustainability initiatives, and recognition of environmental sustainability sponsors?
4. Are there demographic differences between the possible fan clusters?

Method

Participants

The participants for this study were fans of a Division I athletics department (AD) in the western United States. This AD has a variety of environmental initiatives such as sustainability themed games, LEED facilities, and Zero-Waste events. Game day efforts included zero-waste signage and videos, zero-waste stations and goalies (i.e., student volunteers at each station), in-game public service announcements, in-game Twitter contests, and environmental product giveaways (e.g., Kitchen Composters). The game-day initiatives are funded through a sponsorship with three environmental-focused corporations (IEG Sponsorship, 2013). One week after the final game day promotion ended for men's and women's basketball, an e-mail invitation was sent to ticketholders (2,508 email addresses) who attended at least one of the sustainability themed games in the AD database. The e-mail included a brief description of the research and a web-based link to the survey. The survey link was active for one week. No reminders were sent and no incentive was used per the request of the AD.

A total of 662 fans responded to the survey for a 26.4% response rate. After reviewing the responses and cleaning the data, 85 responses were deemed unusable due to invalid responses (e.g., no response, blank responses); thus, 577 surveys were deemed usable for analysis. The average age of the participants was 48.0 years old (SD = 16.96), predominately male (69.2%) and had an annual household income between $75,000 to $105,000 (38.0%). Forty-five percent of the participants

identified as neither an alumnus nor student of the university (N = 259), 42.5% as an alumnus (N = 245), 12.3% as a current university student (N = 71), and two participants did not respond (0.3%).

To examine the sample for generalizability to the university men's and women's basketball fan bases, the demographics measure in the current study were compared to an AD-funded survey of the fan base in 2013 (Turnkey Intelligence, 2013). The demographic data for the 2013 study closely matched this study on the basis of gender (69.2% male for current study v. 70% male), income (largest category percentage between $75,000 and $125,000), and age ($M$ = 48.0 years for current study v. M = 47.7 years old). Therefore, it was understood that the current study had a demographically representative sample to the overall basketball fan base. See Table 1 for a full summary of the demographics of the sample from this study.

Table 1

Characteristics of Respondents

Category		***N***	**%**
Age			
	18 - 39 years	179	31.0%
	40 - 59 years	211	36.6%
	60 years or older	174	30.2%
	Missing	13	2.3%
Gender			
	Female	177	69.2%
	Male	399	30.7%
	Missing	1	20.0%
Yearly Household Income			
	< $75,000	144	25.0%
	$75,001 - $150,000	221	38.0%
	$150,001 or more	181	32.0%
	Missing	31	5.0%
Fan Type			
	Current Student	71	12.3%
	Alumni	245	42.5%
	Neither	259	44.9%
	Missing	2	0.3%
Season Attendance			
	1 - 2 games	38	6.6%
	3 - 7 games	80	13.9%
	8 or more games	459	79.5%
At-Home Behaviors			
	Recycle	539	94.3%
	Compost Food Waste	169	29.3%
	Compost Yard Waste	200	34.7%
	None	38	6.6%

The instrument for this study was developed primarily as an evaluative measure of the promotional games and gauge perceptions of environmental activities conducted by the AD. At request of AD personnel who funded the study, the instrument was to be short and avoid repetition when possible. Development of the instrument was done through the following process. The authors, along with representatives from the AD, discussed the best measures for their evaluative purposes while having academic merit. An initial draft of the survey was created by the authors. The content validity of the survey was subject to expert review by two sport management academics, not directly included in the authorship, and one sustainability practitioner with experience in research methods. The panel of experts was asked to check content relevance, representativeness, and clarity of the items (expectations, fan connection, future behavior, perceptions of leadership and profile enhancement, and environmental values) (Hardesty & Bearden, 2004). Based on the review modifications were made to include additional items of perceptions of leadership and profile enhancement while all other items were deemed clearly representative. The instrument was then pilot tested with a representative sample of 17 fans who attended basketball games in the past to assess items clarity, survey flow, completion time, and data accuracy. Based on the pilot, wording sustainability initiatives terminology was clarified to environmental sustainability initiatives but no other changes were suggested.

Demographics and behaviors. As mentioned previously, demographic items included gender, age, and income (open-ended and later categorized). Additionally, participants were asked about affiliation with the university (student, alumnus, or neither) and the number of games they attend in a season for both men's and women's basketball games. To gauge at-home environmental behavior, participants were asked if they currently recycle, compost food waste, and compost yard waste.

Environmental initiatives. Respondents were asked if they knew about the university's commitment to and leadership related to sustainability. Respondents were asked to indicate awareness of two major environmental initiatives (Zero Waste Football and LEED Platinum Basketball Facility). They were also asked about recall/awareness of the "official" AD environmental program sponsors (three total).

For further analysis of research questions, constructs were created for multi-item measures. These included expectations, fan connection, future behavior, perceptions of leadership and profile enhancement, and environmental values. For all constructs, except values, a 4-point scale was used to extract a specific response from the respondents. Correlations and measures of reliability and validity of the constructs are shown in Table 2.

Expectations. Three items, developed by the authors, were included to determine the participant's expectations of the AD, university, and fans to under-

take environmental sustainability efforts. These three items were measured using a 4-point scale (1 = *no expectation* to 4 = *strong expectation*).

Connection. Participants were asked to respond to three items to determine their connection to the AD. The items were modified from a commonly used team identification scale (Wann & Branscombe, 1993). These items included how important the university, and subsequently their identity, with the university is to the individual. One item (not in scale, but used in Research Question one) also asked about the importance of AD-led environmental initiatives and their relation to being a fan of the program. All items were measured on a 4-point scale (1 = *not at all* to 4 = *very*).

Future behavior. Participants' future behavior item were developed by the authors. The three items included how environmental activities at AD events influenced 1) ticket purchasing athletic events, 2) partaking in environmental activities at an AD event, and 3) undertaking environmental activities at home. It is important to note that these items measure future behavioral intentions and not actual behavior. All items were measured on a 4-point scale (1 = *not at all* to 4 = *very likely*).

Perception–leadership. Participants were asked three items, developed by the authors, to determine their perception of leadership of the AD concerning their environmental sustainability efforts. These items included items examining the extent to which the participants believed the athletic department were 1) leaders in their conference, 2) the NCAA, and 3) the sport industry related to environmental initiatives. All items were measured on a 4-point scale (1 = *not at all* to 4 = *very strongly*).

Perception–profile. Two items, developed by the authors, were included to evaluate participants' perception of the university and AD by engaging in environmental activities. These two items included 'To what extent do you believe: [university] sporting events and AD environmental activities enhance the profile of the university; environmental activities at [university] sporting events and AD enhance the profile of the athletics department?' Both items were measured on a four-point scale (1 = *not at all* to 4 = *very strongly*).

Environmental values. To assess the environmental values of the participants, four items were modified from past research (De Groot & Steg, 2007; Steg et al., 2005). Since our study focused on the environment, we chose to assess biospheric values. These items focused on protecting the environment; preserving nature; respecting the earth, live in harmony with other species; preventing pollution; unity with nature, and fitting into nature. All items were measured using a 5-point scale identical to previous biospheric values measures (Casper et al., 2014) (1 = *not at all important* to 5 = *extremely important*).

Table 2

Construct Composite Reliability and Validity

Construct	1	2	3	4	5	CR	AVE
1. Expectations	1.00					.90	.75
2. Connection	.06	1.00				.91	.77
3. Future Behavior	.61**	.09*	1.00			.77	.53
4. Perceptions – Leadership	.40**	.24**	.42*	1.00		.95	.86
5. Perceptions - Profile	.55**	.12**	.61**	.65**	1.00	.93	.87
6. Environmental Values	.59**	.04	.51**	.30**	.47**	.93	.78

Note. * = $p < .05$; ** = $p < .01$

Data Analysis

Initial analyses included frequencies, means, and standard deviations of the items. To create and assess constructs based on multi-item scales, correlations and confirmatory factor analysis (CFA) was conducted. CFA assessed reliability and validity of constructs based on factor structure, measurement model fit statistics, composite reliability (CR), and average variance extracted (AVE) (Garson, 2013; Hu & Bentler, 1999). To find distinct segments of fans based on their environmental perceptions, K-means cluster analysis was the chosen method (Ross, 2007). K-means cluster analysis is the process of partitioning a group of data points into a small number of clusters. The clustering procedure aims to partition sample observations into k clusters in which each observation belongs to the cluster with the nearest mean (Norusis, 2009). Constructs included in the cluster analysis for grouping were fan expectations, future behavior, perceptions of leadership and profile enhancement, and environmental values. The K-means procedure in SPSS 22.0 was used to assign individual respondents into distinct clusters. In addition to the cluster analyses, a one-way analysis of variance was performed to show which environmental construct dimensions contributed to the cluster formation (Norusis). Finally, a canonical discriminant analysis determined whether clusters could be distinguished from one another based on demographic and behavioral characteristics. Discriminant analysis determined how the clusters differed based on recognition/awareness of environmental initiatives activities and sponsors (Hair et al., 1998; Ross).

Results

The results indicated that overall there was a high expectation for the AD to undertake environmental efforts (72%), demonstrating the importance of AD efforts. Additionally, 69% of the respondents had at least an expectation or strong expectation that fans should be undertaking environmental efforts (e.g., participation in recycling or composting) at the athletic events. Building on this fact, over 70% of the respondents stated that environmental efforts were important or very important in relation to their fandom of the athletics program.

Encouragingly, based on the AD environmental efforts, 73% of the fans were at least somewhat likely to undertake environmental activities at events and 56% at home. Only 34% indicated that the activities had an impact on attendance/ticket purchasing. More than 83% of all fans believed, at least somewhat strongly, that the AD was a leader in environmental efforts and the efforts helped with enhancement of University and AD profiles.

For further analysis, constructs were created for multi-item scales that were adopted from previous research or created by the authors specifically for this context. These included fan expectations of environmental efforts (expectations), fan connection to the AD (connection), future behavioral intentions based on environmental efforts (future behavior), fan perceptions of leadership based on efforts (perceptions-leadership), fan perceptions of profile based on efforts (perceptions-profile), and environmental values of the fans (values). Confirmatory factor analysis found that the items fit the constructs well (Hu & Bentler, 1999). The measurement model showed good fit (Chi-Square = 349.63 (df = 120), $p <$ .05; CFI = .97; TLI = .96, RMSEA = .05) and all standardized factor loading were above .69. Table 2 shows there was no evidence of multicollinearity based on correlations (<.80) and the constructs were reliable and valid (CR >.70 and AVE >.50) (Garson, 2013). To address common method variance a common latent factor was added in the CFA model. There were no large differences (>.20) in standardized regression weights between the models indicating the variance is attributable to the constructs (Podsakoff et al., 2012).

The second research question explored the existence commonalities driving unique and identifiable clusters of fans based on expectations, likely future behavior, perceptions of leadership and profile enhancement, and environmental values. K-means cluster methods were used to identify clusters based on the environmental-specific constructs stated in the research question (Norusis, 2009). The procedure revealed two identifiable clusters. Cluster One included 218 respondents (38%), Cluster Two included 307 respondents (53%), and 52 respondents (9%) were not included in either cluster and based on the purpose of the clustering method excluded from further analysis (Ross, 2007). Results of the ANOVA indicated that all of the constructs contributed to the cluster formation (see Table 3). When comparing the two clusters (see Table 3), it is apparent that Cluster Two represents respondents that have a more favorable perception of AD environmen-

tal actions and significantly more pro-environmental in their responses than Cluster One. Therefore, Cluster One was labeled as the low pro-environmental cluster while Cluster Two was labeled the high pro-environmental cluster. The third research question explored where there were demographic differences between the fan clusters. Therefore, following the classification of respondents, the next step was a discriminant analysis to describe the characteristics of each cluster based on data not included in the cluster procedure (Hair et al., 1998). This included age, gender, income, attendance, and connection to the program. The descriptive statistics for each of these variables across clusters are shown in Table 4. There were no significant differences between the clusters based on age, income, attendance, or fan type. Cluster One, low pro-environmental, was found to have a significantly higher percentage of males and significantly more fans that had a high or very high connection to the AD.

Table 3

ANOVA Table Based on Cluster Membership

Construct	Cluster One	Cluster Two	*F*	*p*-value
Expectations	2.24	3.47	387.27	<.001
	(.86)	(.56)		
Future Purchase	1.40	2.33	299.97	<.001
	(.47)	(.69)		
Perceptions - Leaders	1.97	3.01	259.00	<.001
	(.78)	(.68)		
Perception - Profile	1.74	3.12	652.40	<.001
	(.61)	(.66)		
Environmental Values	3.46	4.5	313.87	<.001
	(.80)	(.55)		

Note: Cluster One = low pro-environmental; Cluster Two = high pro-environmental

The fourth research question asked how the identified clusters differ related to awareness of the AD's environmental initiatives, awareness of their commitment to environmental sustainability, and recognition of the sponsors of the AD's sustainability initiatives. The descriptive statistics for each of these variables across clusters are shown in Table 5. The table shows that Cluster One and two differed significantly for all variables except for recognition of one of the three total en-

Table 4

Descriptive Statistics for Variables Across Clusters

	Cluster One		Cluster Two		Chi Square	*p*-value
	Frequency	Percentage	Frequency	Percentage		
Age					0.152	0.927
18-39 years	67	31.6%	97	32%		
40-59 years	78	36.8%	115	38%		
60+ years	67	31.6%	91	30%		
	212	100%	297	100%		
Gender					15.45	<.001
Female	46	21.1%	114	52.9%		
Male	172	78.9%	193	37.1%		
	218	100%	307	100%		
Income						
>75K	45	22.2%	80	25.1%	1.97	0.347
75,001 - $150K	83	40.9%	121	40.9%		
$150,001 or more	75	36.9%	95	34.1%		
	203	100%	296	100%		
Attendance						
1-2 Games	15	6.9%	20	6.5%	0.146	0.93
3-7 Games	32	14.7%	42	13.7%		
8+ Games	171	78.4%	245	79.8%		
	218	100%	307	100%		
Fan Type						
Student	18	8.3%	43	14%	4.01	0.135
Alumnus	97	44.9%	132	43%		
Neither	101	46.8%	132	43%		
	216	100%	307	100%		
AD Connection						
Low	8	3.7%	4	1.3%	18.79	<.001
Medium	42	19.5%	35	11.4%		
High	52	24.2%	122	39.9%		
Very High	113	52.6%	145	47.4%		
	215	100%	306	100%		

vironmental program sponsors. The high pro-environmental cluster (i.e., Cluster Two) was significantly more aware of the AD's environmental, initiatives (i.e., Zero Waste football, LEED Platinum Basketball Facility), the AD's commitment to sustainability, and had a higher overall sponsor recognition (two of the three).

Table 5

Analysis of Clusters Based on Awareness of Initiatives and Sponsor Recognition

	Cluster One		Cluster Two			
	Frequency	Percentage	Frequency	Percentage	Chi-Square	*p*-value
Aware of AD Commitment to Sustainability						
Yes	150	70.1%	273	90.1%	33.74	<.001
No	64	29.9%	30	9.9%		
	214	100%	303	100%		
Environmental Program Sponsor Awareness						
Sponsor A						
Yes	39	17.9%	57	18.6%	0.039	0.469
No	179	82.1%	250	81.4%		
	218	100%	307	100%		
Sponsor B						
Yes	37	17%	84	27.4%	7.78	0.003
No	181	83%	223	72.6%		
	218	100%	307	100%		
Sponsor C						
Yes	40	18.3%	106	34.5%	16.62	<.001
No	178	81.7%	201	65.5%		
	218	100%	307	100%		
Aware of AD Initiatives						
Zero- Waste Football						
Yes	60	27.5%	142	46.3%	18.89	<.001
No	158	72.5%	165	53.7%		
LEED Platinum Basketball Facility						
Yes	67	30.7%	156	50.8%	21.04	<.001
No	151	69.3%	151	49.2%		
	218	100%	307	100%		

Discussion

Previous research examined the environmental behavioral intentions of sport fans (Casper et al., 2012; Casper et al., 2014; McCullough & Cunningham, 2011) and the platforms sport organizations can leverage to promote such behaviors to stakeholders (i.e., fans) (Inoue & Kent, 2013). This research builds on the literature by examining the relationship an AD's sustainability efforts have on fans' attitudes,

behaviors, and the perceptions of the AD's brand. While not comprehensive (e.g., not all conceivable events and actions can be accounted for), the study does help bring together fan engagement elements within CSR and marketing (Babiak & Wolfe, 2006; Rettie et al., 2012). The results offer sport managers a better foundation from which to judge receptivity of environmental actions, possibly even for different communities of fans within a fan base, and a way to understand how the events may impact fan sustainable behaviors.

The results also helped to identify two clusters of fans, specific to this green game campaign, who differ in their pro-environmental attitudes and perceptions. Based on these results, the high pro-environmental cluster had higher expectations of the AD efforts, were more willing to engage in sustainable behaviors, and also indicated higher levels of purchase intentions and increased perceptions of the brands. In the following sections, we outline these results and the managerial implications arising from them.

Fan Receptivity and Expectations

In response to the first research question, the data showed there is an expectation that actions should be taken by the AD and fans. As noted earlier, university administrators are increasingly making the environment a priority on campus. Athletics departments are high profile members of a college or university community, and thus, are being asked to take greater roles in addressing environmental issues (Casper & Pfahl, 2015; McCullough, 2013; Pfahl et al., 2015). The data showed that an expectation for action is present among pro-environmental fans. Understanding the receptivity, expectations, and attitudes of this consumer group provides sport managers and athletics department personnel opportunity to create environmental strategies that make sense for their organization. While sport organizations can implement structural initiatives (e.g., changing HVAC or refrigeration units; installing LED lighting) to reduce their environmental impact, strategies are necessary to engage sport fans to further reduce the organization's impact (McCullough et al., 2016). The data showed fans have expectations of AD action, but there must be an expectation of shared action inclusive of fans (Pfahl, 2011; Sartore-Baldwin, McCullough, & Quatmann-Yates, in press; Trail, 2015, 2016). Environmental activities that are aligned closely with the values and attitudes within a fan base will create meaningful engagement opportunities (i.e., sponsorship, education) with fans thus reaping both potential financial and CSR/goodwill benefits (McCullough & Cunningham, 2010).

With 70% of the respondents stating environmental efforts were important or very important in relation to their fandom of the athletics program, sport organizations can utilize the special nature of fandom to reach fans and engage them in environmental efforts via sponsors and partners because it becomes a way of acting at an event and as a fan of a sport organization.

Within this study, we empirically demonstrate that environmental sustainability campaigns on behalf of a sport organization attract lower identified fans and

strengthen the perceived value of the sport brand. This is beneficial to the sport organization to increase affinity to their brand separate of on-field performance.

There is an opportunity for sport organization personnel to align their environmental sustainability efforts with marketing and revenue generation opportunities, which would continue the process of better integrating environmental thinking and activities into overall strategic planning (e.g., sponsorship, green games ticket incentives for special events). Further, such action will seek to engage fans with low fan identification (i.e., Cluster Two) as both environmentally concerned people as well as to strengthen the fan within them. To this point, McCullough and Cunningham (2010) posit that sport organizations can attract new fans by engaging in environmental sustainability because "ultimately sport organizations wish to have low (social) and medium (focused) identified fans become highly (vested) identified fans" (p. 359).

Further, the study showed fans in Cluster Two had a high level of perception of the AD brand for their sustainability efforts. Of great importance is that the depth of the fans' belief in the brand supported the environmental efforts and perceived the AD to be leaders within the NCAA and among other sport organizations concerning environmental sustainability. This finding is also consistent with McCullough and Cunningham's (2010) conceptual model that indicated increased goodwill perceptions for engaging in sustainability initiatives. This perception should be noted by sport managers as another benefit of implementing environmental sustainability initiatives beyond economic benefits through cost reduction.

Fan Behavior Change

The opportunities for engagement with fans highlight the need to advocate for the most difficult aspect of environmental activities in sport: behavior change, both at an event and at home. While the data showed a high expectation for the AD to undertake environmental efforts, it is the fans who will enact much of the change at events, and most importantly, at home. Further, the results indicate a high percentage of participants expected AD personnel to engage in sustainability initiatives, meaning these initial findings support the call for sport to influence everyday behaviors (Ioakimidis, 2010). This indicates that sport organizations with fans, as seen in Cluster Two, that have higher environmental identification might expect their teams to follow suit resulting in increased social pressures from fans for the organization to deepen their commitment beyond symbolic sustainability gestures (e.g., recycling, green games) to deeper commitments (McCullough et al., 2016).

To summarize, fans showed high levels of engagement at a venue (73% likely to participate at events), but were less likely to incorporate them into personal norms or self-concepts (56% home behaviors) or even into revenue generating behaviors such as ticket purchases (34% indicated the activities impacted their attendance/ticket purchasing). The higher percentage of behaviors at events is

mostly likely to ease of performing the behaviors at the games (volunteers helping at waste stations; having compostable products and bins) and possible social norming. Cognitively, this is an important step as it shows some normalization of environmental efforts within sports, specifically those at the intercollegiate level and with expectations for actions by AD personnel and fans (McCullough, 2013). Increasing levels of normalization, coupled with those in daily life, continues to show the importance AD efforts can play in the lives of fans/community members (Stern, 2000). There are continued efforts to translate behaviors at home and the sponsored initiatives have an "ask" for at home behavior (recycle plastics; save water; and compost).

Fans Who Care

The fan clusters discussed here relates to previous patterns of fan culture that sees associations with sport teams and active participation in relationship-oriented activities (Casper et al., 2012) and the interplay of cognitive, affective, and behavioral elements related to the environment (Peattie, 2010; Straughan & Roberts, 1999). Interestingly there were no significant differences among various demographics (age, income, frequency of attendance, or fan type). In particular, previous research showed age (Xiao & McCright, 2015), income (Gamba & Oskamp, 1994), and higher income earners identify with and respond to environmental sustainability programs (for a review see Van Liere & Dunlap, 1980). However, Straughan and Roberts (1999) suggest psychographic criteria are more useful than demographic criteria when identifying and segmenting green (i.e., ecologically conscious) consumer behavior.

The analysis revealed one demographic category was significant in this study: gender, especially within Cluster Two. Female fans (i.e., highly associated with the environmental actions) are important because the data provide a first anchor point within the fan segments that show a return on an environmental investment. Tailgating and in venue efforts are often discussed in terms of environmental engagement with fans, but in terms of fan segments, this study indicates clear segments who find environmental actions important rather than a strategy oriented focus on initiating them. As mentioned earlier, Cluster Two consistent of fans that had a higher environmental identification, which consisted mostly of females and was low to moderately identified with the AD.

Previous research demonstrated higher environmental identification among female participants (Jorgenson & Givens, 2013) and among female sport spectators (McCullough & Cunningham, 2011). According to a study commissioned by the Sport Business Journal (2007), 30% of adult females (18 and older) are fans of basketball and football—two of the most publicized and covered college sports. These sports also account for the highest attendance levels and viewership within the college ranks. In 2014, females accounted for 41% of college football and 38% of basketball attendance and viewership (Sport Business Research Network, 2014). This finding is also consistent with Jin et al. (2015), who found female ath-

letic donors were more likely to give money for environmentally friendly stadium projects. They called for this group to be a priority within athletics department donation efforts and this study builds on that call by showing that overall environmental efforts conducted by athletics department personnel are also received well by female fans of intercollegiate athletics.

This finding means environmental activities can appeal female fans in different ways and with different messages than to male fans. Previous research found female fans are marginalized in their experience and consumption of spectator sport (Hoeber & Kerwin, 2013) and this finding demonstrates the importance of marketing or highlighting sustainability efforts on behalf of sport organizations to female fans. Previous research has suggested different marketing strategies are necessary to build trust among female consumers (Porter et al., 2012) and to address various motivations or overcome constraints keeping female fans from consuming or attending sporting events (Trail et al., 2008) or other types of consumer purchasing behaviors (Cunningham & Melton, 2014).

Sport managers and researchers should investigate whether or not differences occur within the female community of the fan base (e.g., alumna compared to students) specific to environmental social issues since previous research shown females are more likely to respond positively to environmental CSR initiatives in non-sport context (Hur, et al., in press) and other social issues (i.e., sexual orientation inclusivity) (Cunningham & Melton, 2014). Cunningham and Melton found social issues increased the likelihood of attracting female customers and to increase brand perceptions of a fitness club if the organization promoted its inclusive initiatives. Their finding, and the results from this study, supports the benefits of promoting and use other social issues (i.e., environmental sustainability) to attract and increase brand perceptions among prospective and existing female fans or customers.

Limitations and Future Research

The findings provided must be couched within the limitations of the study. Primarily, the context studied is not identical to the strategic landscape at every intercollegiate athletics department or sport organization. Related to this issue is that the university in this study was a highly progressive institution known for environmental actions university-wide, including athletics. Further research can seek to replicate measures in this study and extend it by seeking to understand the nature of the clusters shown here (i.e., differences in female fans within their own community) or context specific consumer segments. In addition, research can work to begin to build a typology, or at least general profile, of intercollegiate athletics fans who have the highest probability or are most likely to support the environmental efforts of athletics department personnel. This would add further weight and direction to the call for multiplicy and targeting of messages among communities within a fan base noted earlier in the discussion section.

Second, the data was cross-sectional. It is difficult to draw a causal link between the green theme games and activities to changes in a fans cognitive, affective, and behavioral levels. Scholars are encouraged to conduct pre- and posttests as this particular study did not (i.e., determine influence of environmental sustainability on fan identification) and to further examine the influence of psychographics.

Third, AD personnel restricted the number of solicitation rounds allowed. While the participants' demographics were matched based on prior attendance statistics, a greater response rate would add to validity and further generalizability of the results. Given the importance of the clustering findings and female engagement strength, it is important to also continue to explore the differences in engagement based upon male and female fans (e.g., cognitive, affective, behavioral) and how environmental efforts play a role in fandom. Additionally, comparative research can be conducted across all intercollegiate levels and sports to examine the findings raised here in other contexts.

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