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Journal of Issues in **Intercollegiate Athletics**

Intercollegiate Sport and the Environment: Examining Fan Engagement Based on Athletics Department Sustainability Efforts

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The purpose of this study was to examine how environmental education efforts at a sporting event related to environmental behavioral intentions, in the context of a promotional green game, based on value-belief-norm (VBN) theory. A total of 2,700 respondents, who attended an intercollegiate Division I football game with an environmental sustainability promotional theme, completed an online survey. Structural equation modeling was applied to examine the linkages between values, beliefs, norms, and behavioral intentions. The results found that a majority of fans recognized or participated in green game game-day activities and fans expected athletic departments to incorporate environmental sustainability actions and education in athletic events. Tests of the VBN model found respondents' values, beliefs, and norms significantly predicted pro-environmental behavioral intentions at the sport event and everyday life. This was the first study to examine environmental education related to fan behavior in a sporting context. The findings provide evidence that through environmental education, sport organizations may impact fan environmental behavior intentions, further emphasizing the importance of environmental educational actions by sport organizations.

The impact of sport on the natural environment is coming under increased scrutiny from the highest professional levels to the interscholastic and amateur levels (Casper, Pfahl, & McSherry, 2012; Hums, Barr, & Guillon, 1999; Jefferson Lenskyj, 1998; Mallen & Chard, 2011). At the college and university level, athletic departments are adopting greener practices (e.g., recycling) and, in doing so, are engaging millions of college sport fans in non-political public education about environmental protection (Natural Resources Defense Council (NRDC), 2013).

Universities and colleges are in an enviable place to facilitate dialogue and change efforts related to environmental issues. This is due to their ability to aggregate research talent and resources and to engage in environmental literacy efforts through curricular design and outreach events (Figueredo & Tsarenko, 2013; Stafford, 2011; Wright, 2002). The centrality of colleges and universities within local communities is one of the reasons given for the importance of their efforts to bring about environmental change.

Within this context are numerous academic and administrative units, including athletics departments, which are one of the higher profile units at many institutions. Athletics department personnel are increasingly becoming more environmentally aware due to changes in the ways universities and college personnel address their institution's environmental issues (Casper et al., 2012). Athletics departments offer opportunities to educate related stakeholders, especially students, about environmental issues and efforts to address them in a unique manner (e.g., green games) (NRDC, 2013). Such an opportunity links well with the overall mission of higher education and help to accomplish university and college environmental goals and objectives (NRDC, 2013; Swearingen White, 2009). Universities and colleges are complex organizations with a variety of roles to play. For many, universities and colleges were established to fulfill a civic mission and to play a significant role in the development of their local area (e.g., economic impact, social and community engagement opportunities) (Boyer, 1990; Checkoway, 2001; Colby, Ehrlich, Beaumont, & Stephens, 2003; Pelikan, 1992). Public universities and colleges face further challenges and scrutiny due to the use of public funding for their operations. Athletics is a contentious area in such a situation as many questions have been raised over how to fund athletics programs as well as the usefulness of athletics programs to the mission of a university or college (Duderstadt, 2009). Managing these conceptual and perceptual issues is as challenging a task as managing the environmental impact of intercollegiate sport creates (e.g., facilities, traffic) or generating financial savings or revenue generation opportunities from environmental actions (Pfahl & Ott, 2010; Russo & Fouts, 1997; Shulman & Bowen, 2001). The strategies and actions undertaken by university and college personnel in regard to the environment are done in conjunction with and under the scrutiny of many stakeholders (e.g., fans, suppliers, and media). Finding a path that satisfies many, even all, of these stakeholders is an uphill task.

This study examines intercollegiate sport fans' environmental behavior intentions at a *green game* sporting event (i.e., educational intervention) using an environmental theoretical framework, value-belief-norm theory (VBN) as a precursor to behavioral change (Ajzen, 1991; Griffeth, Hom, & Gaertner, 2000; Stern, 2000). For the purpose of this study, a *green game* represents a sporting event where the promotional theme of the event focuses on environmentalism. The VBN framework is applied in this study to understand fan belief systems,

which are linked to personal actions. Even though VBN theory has been tested, it is underutilized sport contexts as well as in relation to actions taken to enhance the environmental education and understanding of stakeholders (e.g., students, fans) (Bratt, 1999; Casper & Pfahl, 2012; Casper et al., 2012; Stern, Dietz, Kalof, & Guagnano, 1995; Scherbaum, Popovich, & Finlinson, 2008). The VBN provides a framework to examine the complexity of perceptual issues through actions that relate to personal actions and those taken at sporting events (i.e., private and public sphere). Athletics department personnel have a significant challenge to craft engagement opportunities and messaging that will speak to both of these contexts in meaningful and lasting ways (Casper et al., 2012; Inoue & Kent, 2012).

This paper will examine the contextual elements underpinning the VBN theoretical framework and context. This is followed by an explanation of the methodology used in the study. The results of the study are presented as are key discussion points that emerged from them. Finally, the paper concludes with a discussion of future research opportunities and important limitations to the study itself.

Theoretical Framework

Studying an individual's environmental values and beliefs is a way to help understand the connections between environmental awareness, knowledge, and action(s) (Casper et al., 2012; Schmidt, 2006). For this study, environmental sustainability refers to ways to improve human welfare by maintaining protective measures against natural materials used by humans and working to ensure humanity can live within the limitations of the natural world (Goodland & Daly, 1996). Sustainability refers to the ability to meet the needs of our current life while working to ensure the best possible future, all other things being equal, for our society's subsequent generations (Pfahl, 2011; Mallen & Chard, 2011; United Nations, 1987). The linkages between environmental, awareness, knowledge, and actions begin at an individual level with significant implications for individual and community action(s).

Sport Fans, Impacts of Interventions, and Study Justification

A key aspect of an environmental strategy framework to address the inclusion of stakeholders such as fans, suppliers, and media outlets (Aragón-Correa & Sharma, 2003; Esty & Winston, 2009; Figueredo & Tsarenko, 2013). Students, a key stakeholder in higher education, are entering higher education with a mindset that understands the importance of environmental issues in general and within their own lives and fans are growing accustomed to environmental themes appearing at sport events (e.g., recycling) (Emanuel & Adams, 2011; Kagawa, 2007; NRDC, 2013; Rushinko, 2010). Given the high public profile of and deep seeded interest in intercollegiate sport, environmental activities connected to athletics department events are a potential avenue for university driven education and outreach related to environmental issues (Casper et al., 2012; NRDC, 2012; NRDC, 2013; Wright, 2002). The environmental strategies and actions taken by athletics department personnel are not only useful for cost savings and revenue generation, but also can be used as an educational tool for students and fans (Pfahl & Ott, 2010; NRDC, 2012; NRDC, 2013). This opportunity stems from the fact that university and college personnel have long used sport as a way to develop and to promote institutional identity (NRDC, 2013). The environment is a more recent addition to the list of elements within university and college identities making intercollegiate athletics well suited to delivering

environmental messages and outreach (Casper et al., 2012; Jin, Lunhua Mao, Zhang, & Walker, 2011; Pfahl & Ott, 2010). One of the simplest ways to do this is to use an existing platform to deliver the message. A *green game* has become a way to engage fans and other stakeholders about the environment (NRDC, 2013). A *green game* utilizes an existing sporting event and overlays environmental messages and activities to the experience. The actual content and conduct of the messages and activities can vary, but the core idea is to educate, to inform, and to engage.

Many sport organization personnel focus a great deal of attention towards understanding their fans for marketing and sales purposes (Duncan and Campbell, 1999; Roy & Graeff, 2003; Trail & Fink, 2000). A *green game* is a primary example of an educational marketing effort as well as a social cause event targeted towards fans. Fans have been studied in sport contexts in relation to their perceptions and behaviors (Campbell, Aiken, & Kent, 2004; Hugenberg, Haridakis, & Earnhardt, 2008; Wann, 1995; Wann & Pierce, 2003), so it is natural that they be studied in relation to their environmental perceptions and actions. Cause marketing, as a way to connect with fans and develop socially responsible events and opportunities for them has grown in popularity (Irwin, Lachowetz, Cornwell, & Clark, 2003). Sport offers a highly visible platform to create awareness for and education of various social causes (e.g., pink games for breast cancer awareness). Specific games related to the environment fall into line with such efforts, but also have the added benefit of being a cause that all people share in as the environment is life. Events using the environment as a theme have been run by sport personnel including the National Basketball Association's Green Week, which includes at least one home game per team, and the University of Colorado's *Sustainability Gamedays* basketball games (Henley, 2014). The Green Week is a week of activities at team home games that involve environmental awareness, community action, and fan engagement. The Sustainability Gamedays were eight men's and women's home basketball games where sustainability issues were highlighted through various activities in conjunction with a corporate partner.

Fan motivations have been studied to better why sport is meaningful to them (Armstrong, 2002; Funk, Mahony, Nakazawa, & Hirakawa, 2001; Robinson & Trail, 2005; Wann, Royalty, & Rochelle, 2002). Fans (co)produce a sport organization's environmental footprint (e.g., by attending games), so it is important to learn more about fans' awareness, knowledge, and actions related to environmental issues at games and the linkage to their everyday lives (Casper et al., 2012; Chard, Mallen, & Bradish, 2013; Nicolaides, 2006).

In this study, fans attending an intercollegiate football game that was conceived and promoted as a *green game* offered a chance to examine an environmental educational intervention relative to fan behavior within a sporting event context (Inoue & Kent, 2012). Developing a foundational understanding of fan awareness, knowledge, and action is proposed as an important way to understand and to contextualize environmental strategy and actions taken by university and college personnel, specifically athletics department personnel, in ways that can be communicated clearly to stakeholders or other interested parties (i.e., educating fans).

Awareness, Knowledge, and Action of Environmental Issues

Environmental perceptions reveal connections between an individual's awareness, knowledge, and the actions (Hums, Barr, & Guillon, 1999; Starkey & Crane, 2003). The three areas are distinct, but interrelated concepts. Understanding each one and how they connect as part of a larger, linked system is important to understanding how changes in their personal lives

and at events can be facilitated (Casper et al., 2012; Stern, 2000). Involving environmental issues in the world of sport brings two aspects of an individual sports fan's life together: his or her everyday actions and those shared with other fans in attendance at sporting events (Hums, Barr, & Guillon, 1999).

For this study, awareness refers to the way an individual understands an issue's components versus simply understanding an issue exists (Casper et al., 2012; Morrone, Mancl, & Carr, 2001; Pfahl, 2011). Similarly, knowledge is defined by the depth of understanding an individual has about the elements of a particular environmental issue (Morrone et al., 2001). Finally, actions are the result of being aware and knowledgeable about a topic while being willing and able to take action (Trendafilova & Chalip, 2007). Ascriptions of responsibility for addressing environmental issues depend on a person's environmental responsibility values (i.e., my responsibility, their responsibility) (Emanuel & Adams, 2011; Figueredo & Tsarenko, 2013; Stafford, 2011; Stern, 2000).

In university settings, it was noted that inclusion and engagement are facilitated by university environmental efforts across a number of areas (e.g., curricular, recycling programs), but willingness to participate is dependent upon more than only an environmental mindset (Figueredo & Tsarenko, 2013). Attitudes are formed from systems that aggregate internal information with that of broader societal information (Casper, Pfahl, & McShery, 2012; Figueredo & Tsarenko, 2013; Pfahl, 2011; Pfahl & Ott, 2010). Sport fans face the same issue. Fans impact the environment by attending sporting events (e.g., tailgating, transportation), and they are also part of the larger environmental footprint created by sport organizations (e.g., water usage, electricity usage). As noted earlier, students in universities and colleges are coming to campus with more awareness and knowledge of environmental issues. Fans are increasing aware of the environmental impact of sport. Capitalizing on this point with educational and other environmentally related outcomes is an important step towards influencing and changing personal behaviors of these stakeholders.

Individuals view the environment differently making research into fan awareness and knowledge of environmental issues an important part of overall environmental work (Casper et al., 2012; Ceccarelli, 1998). Sport fans are critical to athletics department strategies and operations. An individual fan's environmental awareness requires effort to transform it into knowledge and actions by individuals and communities through education and outreach to transform personal behaviors and perspectives (Hansla, Gamble, Juliusson, & Gärling, 2008; Stern, 2000). The ways this transformation occurs is crucial for the success of environmental initiatives (Casper et al., 2012; Inoue & Kent, 2012; Trendafilova & Chalip, 2007).

To address the inherent and complex tensions involved in this context as individual environmental contexts are transposed on sport contexts, an equally comprehensive analytical framework is needed. Such a framework should be able to account for personal perspectives of the environment in general and issues in specific. It should also be able to understand the impact of contextual influences on the environmental perceptions, awareness, and knowledge of an individual.

The Value-Belief-Norm Framework

Individual levels of environmental awareness and knowledge are foundational aspects of an individual's perception of the environmental and issues associated with it. Understanding individual levels of awareness and knowledge requires a deeper understanding of the aspects

within an individual's environmental perceptions. Any environmentally oriented event implemented to raise awareness, to educate, or to engage stakeholders (e.g., students) is driven by improving environmental literacy and changing individual levels of environmental awareness and knowledge (Moody, Alkaff, Garrison, & Golley, 2005; Morrone et al., 2001; Moody & Hartel, 2007; Stables & Bishop, 2001). The result is a more informed perspective and, hopefully, more environmentally-friendly actions (Moody et al., 2005). Therefore, a *green game* acts as an educational platform and use of the VBN might help to better understand the connection between sport organization-led environmental actions and fan environmental behavioral intentions.

The VBN framework of pro-environmental behavior developed by Stern and colleagues (Stern et al., 1995; Stern, 2000) addressed this issue by incorporating three theories. 1) Universal Theory of Human Values (Schwartz & Bilsky, 1987) adopts the traditional conception of values as variables that guide and determine action and attitudes towards objects and situations. 2) Norm Activation (Swartz & Howard, 1981) explains altruistic and environmentally friendly behavior. 3) The New Ecological Paradigm (Dunlap & Van Liere, 1978; Dunlap et al., 2002) measures social awareness of the biosphere and how it is affected by human action. VBN explains environmentally responsible behavioral intention through activation of personal norms that are influenced by an individual's beliefs toward the consequences of his/her actions, which provoke an ascription of personal responsibility. Additionally, inherent in the VBN framework are four main contextual variable areas: attitudinal factors, contextual forces, personal capabilities, and habits and routines (Stern, 2000).

A strength of the VBN structure is that it closely resembles the connections between perceptions, values, and actions that also occur in organizational settings as a part of strategic planning processes, but is specific to environmentalism (Casper et al., 2012; Stern, 2000). It also provides a method to investigate the awareness, knowledge, and action(s) links that are at work in higher educational institutions' environmental education activities (Davis, O'Callaghan, & Knox, 2009; Figueredo & Tsarenko, 2013; Stafford, 2011). The VBN theory assumes that the pro-environmental behavior is traced back to a chain of causes related to subsequent variables (Figure 1). The VBN model is presented in a linear way linking three levels of analysis: personal values, beliefs, and norms (Stern, 2000). While all levels (values, beliefs, and norms) are hypothesized to predict behavior, variables higher up the chain are posited to be stronger (or explain more variance) predictors of behaviors (e.g., norms stronger than values). The result is a potential wealth of data that can be transformed into outreach and educational programming by a variety of university personnel.

Early studies using the VBN showed how personal norms grounded in moral value positions were important factors towards understanding pro-environmental behavioral intentions (Bratt, 1999; Sharma, 2000; Stern, Dietz, Abel, Guagnano, & Kalof, 1999). Thus, the VBN is a useful lens to examine behavior change efforts at sporting events and the impact that such events have in individuals' everyday lives. The VBN framework helps to understand individual level factors facilitating or prohibiting environmental behaviors (i.e., actions), whether they be in their daily lives (e.g., on campus) or within sport contexts (e.g., as fans) (Scherbaum, Popovich, & Finlinson, 2008; Spaargaren, 2003; Stern, 2000). Similar to other studies that have examined behavior with the VBN (e.g., Scherbaum, Popovich, & Finlinson, 2008; Steg, Dreijerik, & Abrahamse, 2005) and due to procedural limitations, this study did not include all elements Stern's (2000) model. Major elements within the VBN and a discussion of the variables retained the model for this study are described in the next section.

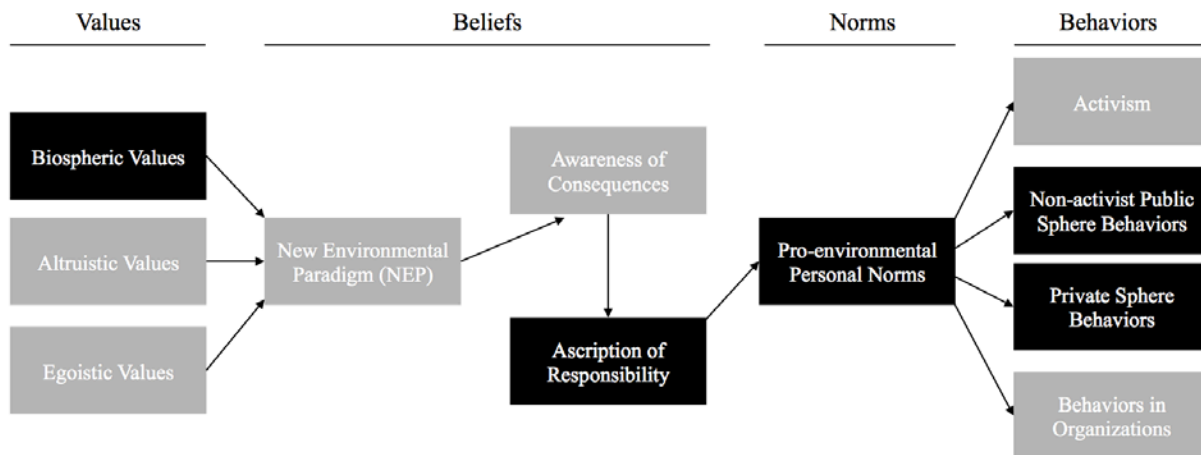


Figure 1: A schematic representation of variables in the value-beliefs-norms theory of environmentalism. Arrows represent postulated direct effects. Direct effects may also be observed on variables more than one level downstream from a casual variable. Adapted from Dietz et al. (2005). Boxes in black are variable included in this study.

Values

Values orient an individual toward stewardship to others and his or her surroundings. It is believed that values placed on different targets (e.g., self, people in general, or the biosphere) direct attention toward value-congruent information, which affects the willingness to support environmental protections (Steg et al., 2005). University and college missions work to establish a shared commitment to a culture within the university itself and within the local community and environmental issues can be found within this commitment (Moody & Hartel, 2007; Morrone et al, 2001; Moody et al., 2005; Stables & Bishop, 2001). While this often takes the place within the realm of a course structure, utilizing athletics as a platform can reach university and local community members and help to foster shared experiences and learning (Bruning, McGrew, & Cooper, 2006).

Within the full VBN model, there are three value orientations: ego, altruistic, and biospheric. An egotistic value orientation relates to people maximizing individual outcomes. An altruistic orientation reflects the welfare of other human beings. A biospheric (or ecocentric) orientation reflects concern for nonhuman species or the biosphere (e.g., concern for the environment). Studies using the VBN found that people who more strongly value concerns beyond their own immediate interests are more likely to engage in pro-environmental behavior (Dietz, Dan, & Shwom, R., 2005). However, values were found to not be a strong predictor of behaviors and the relationship seems to be mediated by other factors such as behavioral beliefs and norms (Steg et al., 2005; Stern, 2000; Stern et al., 1999). This study measured biosphere values since they best relate to care and concern for the environment which was the focus of the *green game* theme (e.g., environmental values).

Beliefs

It is assumed that environmental behavior results from worldviews, or beliefs, individuals have about the relationship between humans and the environment (Steg et al., 2005). Utilizing green games as part of overall university environmental education provides an opportunity

transformative change to take place because it is one example of how to bring individuals with personal worldviews on the environment (e.g., values) together in dialogue to learn about and to share beliefs about environmental issues (Baxter & Montgomery, 1996; Mezirow, 2003). In the end, it is believed this process can help to facilitate better actions towards the environment.

The most common worldview measure, which had been included in the VBN model, is the NEP. However, the NEP was not included in this study since previous VBN testing has found the relationship between worldviews and behavior generally not strong (Casper et al., 2012; Poortinga et al., 2004; Schultz & Zelezny, 1998). Additional beliefs within the VBN framework that may be better predictors of behavior are ones that relate to the role of moral obligation to act in favor of the common good (Steg et al., 2005). These beliefs were created as part of the Norm Activation Model (NAM) (Swartz & Howard, 1981) and are included on the VBN termed Awareness of Consequences (AC) and Ascriptions of Responsibility (AR). AC is related to beliefs about the consequences on pro-environmental non-behavior and how it may affect themselves, others, and the environment. In other words, someone acknowledges that not acting pro-socially results in negative consequences. AR measures how strongly someone feels about themselves or others who are responsible for negative environmental consequences. Most studies have used AR specific to behaviors (e.g., recycling, energy reduction) and in corporate/organizational settings (e.g., corporations) (Scherbaum et al., 2008). Therefore AR beliefs were used in our model since there is a belief held by fans for corporate social responsibility and local engagement for causes such as the environment. Corporate social responsibility efforts, including environmental ones, can create revenue generation opportunities (e.g., sponsorship, in kind partnerships) and cost savings (e.g., reduced energy usage) within the always difficult economic context of intercollegiate athletics (Fort, 2010; Pfahl & Ott, 2010; Trendafilova, Pfahl, & Casper, 2013).

Personal Norms

Researchers have found that social or subjective norms influence individuals to engage in environmentally friendly behaviors in everyday life (see Goldstein, Cialdini, Griskevicius, 2008) and in sport contexts (Casper et al., 2012; Pfahl, 2011). This study explores the influence of personal norms as opposed to subjective or social norms, which are influence by significant peer groups (Ajzen, 1991). Personal norms relate to a feeling of moral obligation or responsibility to perform or refrain from specific actions. Personal norms categorize behaviors as right and wrong (e.g., to recycle or not). University environmental programs and perhaps higher education in general, occupy a similar space in the overall development of students. As noted in the previous values and beliefs sections, environmental outreach through athletics offers a visible and engaging platform to promote ideas and to facilitate change (Marrone, Mancl, & Carr, 2001; Moody & Hartel, 2007; Moody et al., 2005; Stables & Bishop, 2001). The result is a more informed perspective and, hopefully, more environmentally-friendly actions (Moody et al., 2005). Change, when driven by personal norms, has the potential to have a lasting effect (i.e., a shift) in personal behaviors and actions.

According to Stern (2000), personal norms are activated by beliefs that environmental conditions threaten what an individual values (e.g., AC beliefs) and beliefs that the individuals (or organizations) can reduce this threat (e.g., AR beliefs). For this study Personal Norms were looked at specific to self and actions at sport events (e.g., “I feel I should conserve natural resources at sport events”; “Conserving natural resources is important to me”). The first type is

specific to the event because they are contextualized within the game experience itself, which may be influenced by the activities of a *green game*. The second type are those inherent in everyday personal norms, which are important because they occur away from the game day setting and require greater personal effort to take consistent, continuous action.

Behaviors

According to Stern and colleagues (Stern et al., 1999; Stern, 2000), personal norms may influence all kinds of behaviors taken with a pro-environmental intent. They distinguished between four types of behavior (see Figure 1): environmental activism (e.g. active involvement in environmental organizations or demonstrations), non-activist behaviors in the public sphere (e.g. environmental citizenship, support or acceptance of public policies), private-sphere environmentalism (i.e. the purchase, use and disposal of personal and household products that have environmental impact), and organizational actions (e.g. design environmentally benign products). This study focused specifically on behavior in the public sphere (e.g., at sport events) and private sphere (e.g., everyday life). The intervention was fan-specific at a sporting event, so activism behavior and behaviors in organizations were not applicable. However, in the longer term, athletics department events might become platforms to promote activism within various communities (e.g., university students, local community members).

In sum, the fan – athletics department relationship provides a departure point for understanding the fans' environmental perspectives, values, beliefs, norms, and actions at events and in everyday life. It reflects both the complexity of university-oriented initiatives (e.g., macro versus micro level strategy) and demonstrates the ways in which university efforts to garner ability and willingness to participate in environmental issues can be achieved (e.g., environmentally-themed games). The literature showed how a holistic approach provides important stakeholder and organizational insights that are important to environmental strategy development, implementation, and evaluation. However, while examining organizational efforts related to the environment are more common, the literature on fan receptivity of environmental efforts made by higher education institution and individual unit personnel (i.e., athletics departments) actually impact pro-environmental awareness, knowledge, and action(s) is sparse.

The purpose of this study aims to test VBN theory specific to fan behavior in the context of an educational event, by examining whether the theory is successful in explaining game day environmental sustainability behavioral intentions (a type of non-activist behavior in the public sphere) and everyday environmental sustainability behavioral intentions (private sphere behavior) in the context of a *green game*. In line with Stern (2000), and as theoretically justified, this study is grounded in hypotheses where each variable in the causal chain is related to the next variable and may also be directly related to variables further down the chain. Specific causal hypotheses are as follows (Figure 2):

H1 – Values strongly predict Ascriptions of Responsibility (H1a), while also significantly predicting Personal Norms (H1b) and Everyday Behavioral Intention (H1c) and Sport Behavioral Intention (H1d).

H2 – Ascriptions of Responsibility strongly predicts Personal Norms (H2a), while also significantly Everyday Behavioral Intention (H2b) and Sport Behavioral Intention (H2c).

H3 – Personal Norms are the strongest predictor of both Everyday (H3a) and Sport Behavioral Intentions (H3b).

H4 – Behavioral Intentions will be significantly predicted by other variables further down the chain to a lesser extent.

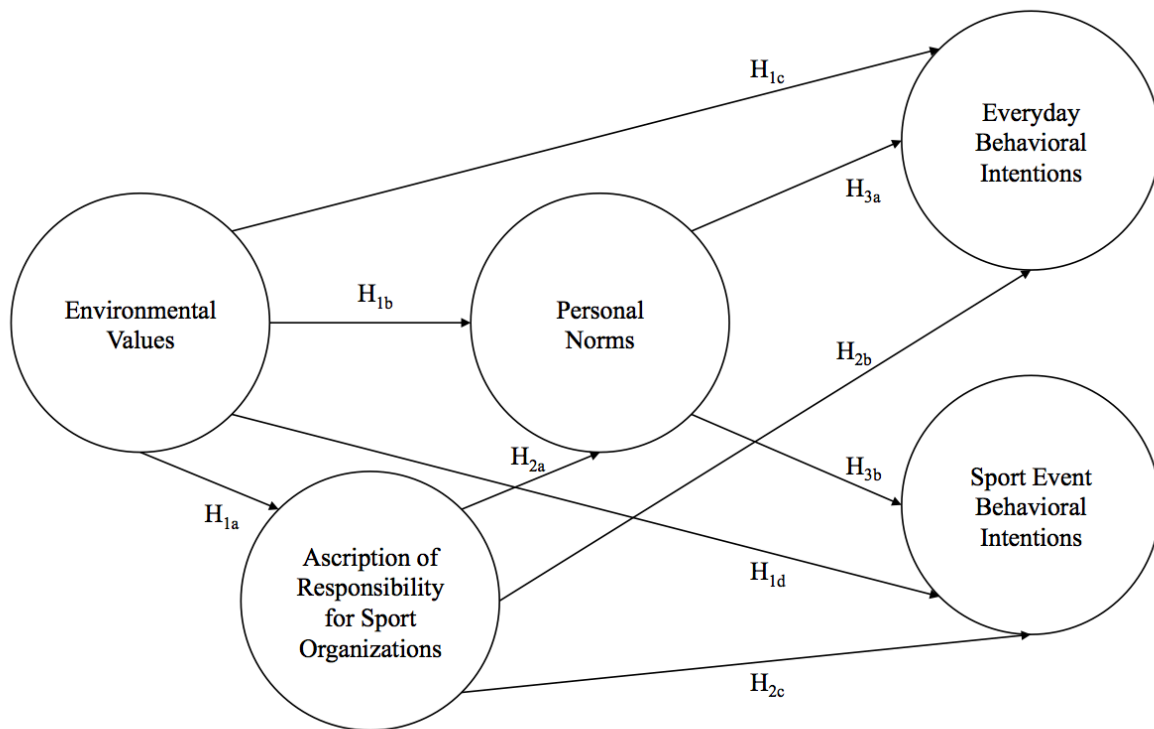


Figure 2: Graphical Depiction of Hypotheses.

Methodology

Setting

The *Green Game* (capitalized for specific game in this study) was a football contest held on September 8, 2012 at a large Division I Bowl Championship Series mid-Atlantic university. The promotional event was organized by the athletic department in conjunction with the university sustainability office. Pre-game marketing included a press release/brief article about the game disseminated to media outlets and placed on the athletic website home page. Information about the game was posted on the athletic department Facebook and Twitter pages. Throughout the game, two 30-second videos (education on ways to reduce environmental footprint at games; on reducing footprint at home) and six educational environmental sustainability messages (three related to game-day behaviors; three for non-game behaviors) were shown on the video boards. The athletic mascots wore t-shirts with the *Green Game* theme, and the game program included an advertisement about the *green-theme* promotion on the inside front cover. In the *fan zone* (designated area for game day promotions/informational booths), an educational *green tailgate* area was displayed that included a Nissan Leaf electric vehicle

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powering an electric grill, local/sustainable food, a waste-free tailgate area, a recycling/composting themed corn-hole game, and giveaways. In addition to recycling collection outside the stadium (standard at previous games), volunteers completed an in-stadium sweep that separated waste into landfill, recyclable, and compostable material.

Data Collection

A web-based survey instrument was used for data collection and included an incentive where respondents could win an athletics prize package. The athletic department sent the survey e-mail invitation on Monday following the *Green Game* (September 10, 2012) to fans who attended the game determined via scanned tickets linked to a ticket holder data base. The e-mail briefly summarized the purpose of the study, provided an IRB consent form, and a hyperlink to the web-based survey hosted by Qualtrics. Three days later, attendees were sent a follow-up e-mail to encourage participation among non-respondents.

Participants

A total of 8,445 valid e-mail invitations were sent and 2,942 were completed in the one week time frame. Data cleaning based on missing values narrowed the total to 2,700, which were used in the analysis (32% final response rate). Most of the participants were season ticket holders (57.9%), 39.4% were students of the university, and 2.8% of the fans had another classification of tickets (i.e., group tickets, single game ticket, mini pack season tickets).

A majority of the participants were male (66.6%), and the average age was 37.46 years ($SD = 17.02$). Participants were also asked to recall aspects surrounding the *Green Game* (Table 1). Specifically, participants were asked if they were aware of the *Green Game* theme before arriving at the event. All participants reported awareness of the *Green Game* though pre-game marketing or in-game activities and promotions. A majority of respondents were not aware of the theme before arriving at the game (79%). Additionally, only 2% of respondents successfully recalled the *Green Game* slogan (Sustain your “name of university”: Game Day and Everyday). A majority of participants participated in recycling both in the stadium (77%) and at the tailgate (75%). Other activities recalled by the participants were announcements on the video board (34%), viewed news about theme on website and/or social media platforms (18%), saw the mascot with *Green Game* theme T-shirts (14%), visited the green tailgate demonstration (12%), composting at the stadium (6%), and read press release or article (4%).

Table 1 - Survey Items Related to Green Game Experience (N = 2700)*Respondents that were aware of Green Game theme before game*

Yes	21%
No	79%

Respondents that recalled the Green Game slogan

Yes	2%
No	98%

Environmental activities participated in at game

Recycling at stadium	77%
Recycling at tailgate	75%
Recalled PSAs and slides displayed on video board	34%
Viewed news about themes game on website, Facebook, or Twitter	18%
Saw mascot with <i>Green Game</i> theme T-shirts	14%
Visited "green tailgate" demonstration	12%
Composting at stadium	6%
Read Press Release/Article	4%

Respondents expectation of environmental sustainably efforts at football games by athletic department

No Expectation	8%
Slight Expectation	6%
Neutral	22%
Some Expectation	44%
Strong Expectation	20%

Instrumentation

The following four scales were included in the model analysis: environmental values, ascriptions of responsibility, personal norms, and environmental behaviors (Table 2). With the

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exception of environmental values, all scales were measured using a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Consistent with recommendations made by Schwartz (1992), participants used an eight-point scale ranging from -1 (*opposed to value*), 0 (*not at all important*), to 6 (*extremely important*) to rank environmental values.

Environmental values. Adopted from previous research, (De Groot & Steg, 2007; Schwartz, 1992; Steg, Dreijerink & Abrahamse, 2005), the four-items related to environmental values evaluated biospheric values (i.e., protecting the environment) of the participants. Participants were asked to rate the importance of the four values as guiding principles in their life: 1) protecting the environment, preserving nature, respecting the earth; 2) live in harmony with other species; 3) preventing pollution; 4) unity with nature, fitting into nature. Reliability coefficient for environmental values was high ($\alpha = .93$).

Ascriptions of responsibility. A four-item scale adopted from Hansla *et al.* (2008) and Stern (2000) was used to measure ascriptions of responsibility *specific* to college athletics. Participants responded to the following four statements: “College Athletic departments should have a responsibility to integrate environmental issues into strategic planning processes”; “College Athletic departments have a responsibility to promote environmentally sustainable practices into their operations”; “College Athletic departments have a responsibility to add environmental issues in employee's daily tasks,”; and “College Athletic departments have a responsibility to facilitate change in environmental behavior of their fan base”. The reliability estimate for this construct was high ($\alpha = .95$).

Personal norms. Six-items adopted from Scherbaum *et al.* (2008) were used to determine the person norms. Participants ranked their agreement to the following six-items to determine personal norms, “Conserving natural resources is important to me,” “I have a responsibility to conserve natural resources,” and “I would be willing to pay higher price to protect the environment,” “I feel that I should conserve natural resources at sport events,” “I feel that I should conserve natural resources at sport events,” and “I would be willing to be inconvenienced to help conserve natural resources at sport events.” Reliability coefficient for personal norms ($\alpha = .91$) was high.

Environmental behavioral intentions. Participants responded to eight-items related to their everyday behaviors and sport event behavioral intentions. Four-items were adopted from Scherbaum, et al. (2008) and Stern et al. (1999) to determine the everyday (private-sphere) environmental behaviors of the participants. Similar to the aforementioned studies, the behaviors measured represent behavioral *intention* since the survey was administered in the week following the game and no longitudinal assessment was conducted. The four-items related to sport event behaviors (public-sphere) were adopted from Scherbaum et al. (2008) and Steg et al. (2005). Phrasing of the behavioral intentions was worded with respect to *Green Game* participation. Participants responded to these two scales after reading the following statement “Based on your GAMEDAY experience vs. (opponent), please state your agreement with the following environmental positions ...” First, participants responded to four-items specific to their game day behaviors. These items included, “Will be more active with recycling at sporting events,” “Will bus or carpool to sporting events,” “Will pick up litter at sport-related events,” and “Will purchase reusable or biodegradable tailgating cups/plates/silverware.” Next, based on the previous statement, participants were asked to respond to four-items corresponding to their everyday behavior. These items included, “Will be more active with recycling in my everyday life,” “Will bus or carpool more often in everyday life,” “Will pick up litter,” and “will conserve

energy more.” Reliability coefficients for sport event behavioral intention ($\alpha = .75$) and everyday personal behavioral intention ($\alpha = .82$) were high.

Table 2 - Survey Items, Constructs, Descriptive and Reliability Statistics

Survey Items/Constructs	M	SD	Std. Factor Loading
<i>Environmental Values</i> ($\alpha = .93$)	4.28	1.38	
1. Protecting the environment, preserving nature	4.45	1.37	.87
2. Respecting the earth; live in harmony with other species	4.25	1.55	.91
3. Preventing pollution	4.55	1.35	.86
4. Unity with nature, fitting into nature	3.86	1.77	.86
<i>Ascriptions of Responsibility</i> ($\alpha = .95$)	5.24	1.35	
1. College Athletic departments should have a responsibility to integrate environmental issues into strategic planning processes.	5.38	1.37	.95
2. College Athletic departments have a responsibility to promote environmentally sustainable practices into their operations.	5.41	1.35	.95
3. College Athletic departments have a responsibility to add environmental issues in employee's daily tasks.	5.15	1.46	.91
4. College Athletic departments have a responsibility to facilitate change in environmental behavior of their fan base.	5.02	1.59	.86
<i>Personal Norms</i> ($\alpha = .91$)	5.53	1.08	
1. Conserving natural resources is important to me.	6.07	1.01	.93
2. I have a responsibility to conserve natural resources.	6.04	1.05	.94
3. I would be willing to pay higher process to protect the environment.	4.58	1.62	.62
4. Sport and recreational organizations should conserve natural resources.	5.74	1.17	.89
5. I feel that I should conserve natural resources at sport events.	5.75	1.18	.89

6. I would be willing to be inconvenienced to help conserve natural resources at sport events.	5.02	1.55	.78
<i>Everyday Personal Behavioral Intention</i> ($\alpha = .82$)	5.19	1.15	
1. Will be more active with recycling in my everyday life.	5.47	1.32	.87
2. Will bus or carpool more often in everyday life.	4.49	1.75	.57
3. Will pick up litter.	5.25	1.39	.69
4. Will conserve energy more.	5.53	1.23	.88
<i>Sport Event Personal Behavioral Intention</i> ($\alpha = .75$)	5.00	1.18	
1. Will be more active with recycling at sporting events.	5.35	1.27	.82
2. Will bus or carpool to sporting events.	4.89	1.90	.50
3. Will pick up litter at sport-related events.	4.84	1.58	.62
4. Will purchase reusable or biodegradable tailgating cups/plates/silverware.	4.49	1.45	.77

Data Analyses

To test the hypothesized model, structural equation modeling (SEM) using AMOS 20.0 was conducted. The first step included was a descriptive analysis and an examination of the data for normality (univariate and multivariate). The second step was to conduct a Confirmatory Factor Analysis (CFA) through a measurement model to examine each latent construct (e.g., environmental values, ascription of responsibility, norms, and behavioral intention) based on factor structure and construct reliability. The last step consisted of testing the structural model to examine conceptual connections between latent variables. While testing the model, the following fit indices were used: Comparative Fit Index (CFI), Tucker-Lewis Fit Index (TLI), and Root Mean Square Error of Approximation (RMSEA). According to Hu and Bentler (1999), fit index values of CFI and TLI above .90 and RMSEA values less than .05 are considered acceptable. Expanded details for each step are provided in the following section

Results

Descriptive Analysis and Normality

Means, standard deviations, standardized factor loadings and construct reliabilities are presented in Table 2, and bivariate correlations are reported in Table 3. The Environmental

Values ($M = 4.28$, $SD = 1.38$) construct was above the mean for its scale ($M = 2.50$). Participants reported the most important value was preventing pollution ($M = 4.55$, $SD = 1.35$) while unity/fitting in with nature was the least important value ($M = 3.86$, $SD = 1.77$). With regards to Ascriptions of Responsibility, participants felt most strongly as though college athletic departments have a responsibility to promote environmentally friendly practices into their operations. Participants indicated their largest concern is to conserve natural resources in regards to their Personal Norms ($M = 5.53$, $SD = 1.08$). Likewise, participants most strongly supported the conservation of energy in their Everyday Behavioral Intention ($M = 5.53$, $SD = 1.23$). Whereas, with their Sporting Event Behavioral Intention, participants indicated that they would be more active with recycling based on the *Green Game* ($M = 5.35$, $SD = 1.27$). Correlations between the constructs found all significant ($p < .01$), positively related moderate to high correlations (Cohen, 1988) ranging .58 (Environmental Values <---> Personal Norms) to .81 (Everyday Behavioral Intention <---> Personal Norms).

Univariate normality of the data was examined with skewness and kurtosis values. All of these values for items in the model were in an appropriate range ($< \pm 2.0$) revealing a mesokurtic distribution of the data and, therefore, a normal distribution. Multivariate normality was assessed based on relative multivariate kurtosis. All values had a normal multivariate distribution (critical values less than 2.0) (Tabachnick & Fidell, 2001).

Table 3 - *Correlations of Constructs in Model*

Item	1	2	3	4	5
1. Environmental Values	—				
2. Ascription of Responsibility for Sport Organization	.71	—			
3. Personal Norms	.58	.62	—		
4. Everyday Behavioral Intention	.63	.63	.81	—	
5. Sport Event Behavioral Intention	.70	.76	.63	.66	—

Note. $p < .01$ level.

Measurement Model

In Step 2, to determine the measurement of the model a confirmatory factor analysis (CFA) was performed (see Table 2). The CFA of the model was based on twenty-two observed measures and five latent constructs (e.g., Environmental Values, 4 items; Ascription of Responsibility, 4 items; Personal Norms, 6 items; Sport Event Behavioral Intention, 4 items; Everyday Behavioral Intention, 4 items). The latent factors were allowed to correlate freely during the assessment of the measurements model (Anderson & Gerbing, 1988). The chi-square statistic for the measurement model was significant ($\chi^2 (199) = 7648.02$, $p < .001$) so additional

indices were analyzed (Hu & Bentler, 1999). Model measurement indices indicated an acceptable fit (CFI = .91; TLI = .90; RMSEA = .06). In addition to model fit, composite reliability and average variance extracted were examined. Each of the five constructs showed acceptable reliability and extracted variance (< .50).

Structural Model

Structural model analysis examined the hypothesized relationships between the latent constructs (see Figure 3). The overall chi-square statistic for the structural model was significant ($\chi^2(201) = 7508.30, p < .001$). Other measurement indices fit (CFI = .90; TLI = .91) were acceptable while RMSEA was slightly higher than acceptable standards (.07). Figure 3 depicts the standardized regression paths for the model. All paths were significant: Environmental Values significantly predicted Ascription of Responsibility for Sport Organizations (H1a), Personal Norms (H1b), Everyday Behavioral Intention (H1c), and Sport Event Behavioral Intention (H1d) fully supporting Hypothesis 1. Ascriptions of Responsibility significantly predicted Personal Norms (H2a), Everyday Behavioral Intention (H2b) and Sport Event Norms (H2c) fully supporting Hypothesis 2. Finally, Personal Norms significantly predicted Everyday Behavioral Intention (H3a) and Sport Event Behavioral Intention (H3b) fully supporting Hypothesis 3. Hypothesis 4 was based on Stern's (2000) theoretical assumptions that behavioral intentions will be significantly predicted by other variables further down the chain to a lesser extent. Our results partially support this hypothesis, as norms were the strongest predictor (based on standardized beta weights) of sport event behavioral intentions followed by AR beliefs, then values. This hypothesis was not supported for everyday behavioral intentions where values were the strongest predictor followed by AR beliefs, and lastly norms.

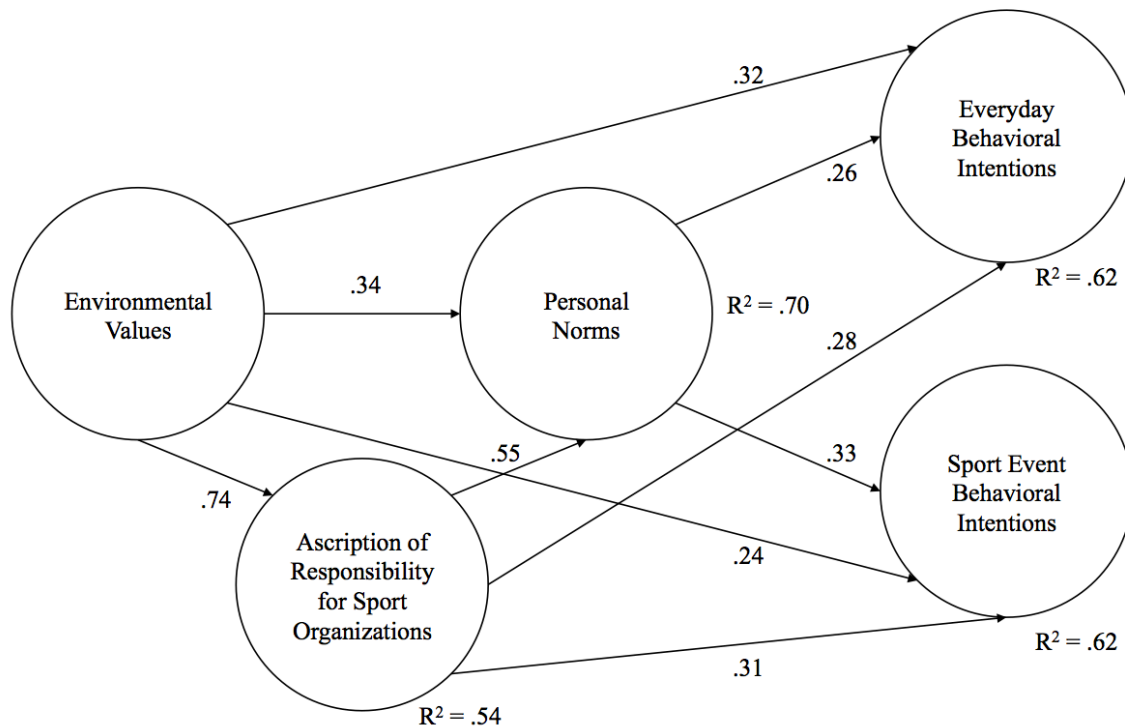


Figure 3: Standardized Results of the Structural Model. Values associated with directional lines are standardized beta weights. Solid lines represent significant ($p < .05$) effects.

Discussion

The purpose of this study was to examine intercollegiate sport fans in the context of a *green game* sporting event (i.e., educational intervention) using VBN theory as a precursor to behavioral change. The societal turn towards more environmentally aware behaviors means that many organizations, college athletic departments included, are now expected to be active with green strategies and actions. As part of this expectation, higher education institutions are in an enviable position to facilitate dialogue and to encourage behavioral change concerning environmental issues, especially within highly visible institutional units (i.e., athletic departments). Evaluation of all aspects of these strategies is needed to examine fan and other university stakeholder receptivity, as they are important parts to the success of university wide environmental initiatives (e.g., facilitating environmentally related behavior change). Considering previous research (Casper et al., 2012) in this area, there is a need to further understand fan belief systems concerning environmental behaviors. In this light, this study contributes to the literature by reporting awareness and receptivity of university-oriented educational environmental-themed events as well as determines the effectiveness of such events related to behavior change. Three key areas of discussion emerged from the findings: the ability for educational *green games* to raise awareness and linkages among the elements in the VBN model, norms, and behaviors.

Awareness Surrounding Green Game

Despite several pre-game marketing tactics (e.g., a press release, media announcements, social media outlets), only 21% of the responding participants who attended the *Green Game* were aware of the game's theme before arriving at the event. Marketing efforts surrounding future *green games* or other game day themes should be done well in advance to increase the effectiveness and fulfill of the event's purpose (i.e., increasing environmental awareness and changing behavior). For example, fans can be educated on their environmental impact even before arriving at the sporting event (e.g., preparing for pregame festivities, mode of transportation to the event). Increasing the effectiveness of this communication can positively influence game day and everyday behaviors. Additionally, the messaging contained in marketing efforts needs to stress the differences in the *Green Game* as compared to other games. Differentiating the game from other themed games can create a distinct atmosphere surrounding the environmental intervention, thus increasing its effectiveness. Differences might include emphasis on non-game activities (e.g., bring telephones to recycle), discounts on parking or tickets for special incentives (e.g., discount on parking for cars with four or more people, and other related activities) (Jin et al., 2011). These ideas are mass oriented and can be augmented by social media efforts that allow for more personalized messaging or, at least, greater individual reach. Such reach can be obtained through target messages towards season ticketholders, students, and other stakeholders.

The *Green Game* offered fans an opportunity to directly engage with or to actively participate in various educational demonstrations to increase their environmental awareness. Despite the low recall (2%) of the *Green Game* slogan (i.e., Sustain your "name of University": Game Day and Everyday), participant recall of educational environmental activities before and during the football game was high (e.g., proactive recycling in the stadium, recall of PSAs, and slides displayed on video board). Further, the event provided educational opportunities to fans on how to incorporate environmentally friendly practices into their game day and everyday lives. Increased environmental awareness among fans further strengthens the basis that leads to deeper environmental knowledge (Morrone et al, 2001) and eventually environmental behavior (Trendafilova & Chalip, 2007).

By exposing fans to various environmental game day behaviors (e.g., recycling, composting, *green tailgating* demonstration), fans were shown how environmental behaviors can be applied to a game day context. With this increased educational awareness, fans are given the tools to fulfill environmental objectives through action (e.g., diverting landfill waste by recycling, waste reduction) rather than simply recognizing the existence of the environmental issue. Much of the change, however, is grounded in the personal values and norms of the fans. One promising finding was that the respondents (64%) expected athletic department sponsored sustainability efforts, suggesting that further efforts will most likely be welcomed rather than viewed as a nuisance or disruption of the fan experience.

VBN model - Values-Ascriptions of Responsibility–Norms Linkages

Hypothesis 1 indicated that Environmental Values would significantly predict the variables in the model (i.e., Ascription of Responsibility for sport organizations, Personal Norms, Everyday Behavior, and Sport Event Behavioral Intentions). The data indicates that environmental values significantly predict the ascription of responsibility that individuals place

on the athletic department to integrate in environmentally friendly practices into their organization, thus confirming Hypothesis 1a. Thus, fans who have strong environmental values are more likely to expect sport organization personnel to incorporate environmental sustainability aspects into their daily operations and strategic planning (Hansla, Gamble, Juliusson, & Gärling, 2008; Hart, 1995). Increased environmental values of sport fans translate into social pressures and of ascriptions of responsibility. The increased pressures from stakeholder groups (i.e., social pressures), such as sport fans, were theorized to cause sports organization personnel to implement and to further their environmental initiatives (Pfahl & Ott, 2010). As environmental awareness increases among sport fans, they will expect sport organization personnel to follow with environmental initiatives.

The data in the study indicates Environmental Values significantly predicted Personal Norms supporting Hypothesis 1b. These results indicate that the higher environmental values held by a sport fan the higher environmental norms the fan will feel. Previous research demonstrated that norms can be important in predicting behavioral change (Casper et al., 2012). As sport personnel continue to utilize environmental sustainability as a new social cause, fans will inevitably encounter such events (e.g., *green game*) encouraging them to change specific behaviors at the game or event (e.g., recycling, composting, waste reduction). These games serve as an educational platform or a *teachable moment* to change specific behaviors (e.g., disregard for the environment). In turn, making such values salient can influence the expectations and norm behaviors or expected behaviors within the context; thus, increasing the receptivity to the educational intervention (i.e., *green game*) and ultimately increasing the effectiveness of the program's objectives.

Lastly, the data indicated that Environmental Values significantly predicted Sport Event Behaviors and Everyday Behavioral Intentions supporting H1c and H1d, respectively. Considering these results, the environmental values of a sport fan will predict their environmental everyday and sport events behaviors. This finding further supports and extends the sport context in which previous research suggests that preconceived attitudes or values towards environmental causes and behaviors predict environmental behaviors at a sport event (Casper et al., 2012; Pfahl, 2011) or everyday settings (Tonglet, Phillips, & Read, 2004). Positive attitudes and values towards environmental issues result in an increased likelihood that individuals will engage in such environmental behaviors as those that were embodied during the *Green Game* (Inoue & Kent, 2012).

Hypothesis 2 predicted that Ascriptions of Responsibility would predict Personal Norms, Everyday Behavior and Sport Event Behavior. The data indicates that Ascription of Responsibility significantly predicted Personal Norms, Everyday Behaviors and Sport Event Behaviors, supporting Hypothesis 2. Sport fans who expect an athletic department incorporate environmentally friendly practices into their daily operations held themselves to the same standards as indicated through the significant findings of H2a. Additionally, the data indicated that Ascription of Responsibility significantly predicted Everyday Behavior and Sport Event Behavior supporting Hypothesis 2b and 2c, respectively. These findings would suggest that ascriptions of responsibility related to athletics may be an important bridge connecting the value-action gap (Blake, 1999). It can be concluded that sport events, even those developed as a broad *green game*, impact fans. Translating game-day behaviors to daily behaviors is a further step for the true success of the environmental efforts to be realized.

Norms and Behavior Link

Hypothesis 3 posited that Personal Norms would predict Everyday and Sport Event Behaviors. The data supported this hypotheses indicating that Personal Norms significantly predicted Sport Event Behavior and Everyday Behavior supporting Hypothesis 3a and H3b, respectively. This further suggests that the organizational influence of college athletic departments can have a significant impact on other game day and everyday environmental behaviors. To this end, the *Green Game* was successful in influencing university stakeholders (i.e., fans) intentions to engage in environmentally friendly behaviors during their game day experience and in their everyday lives. This might be due to the connections that sport organization personnel have with their fans. Behavioral change through the *green game* can be linked to the elements that drive sport fandom in the first place, especially emotional bonds or community engagement (Hums et al., 1999; Trail & Fink, 2000). Developing *green game* interventions and other strategic environmentally related educational engagements will continue to strengthen the ability of sport personnel to work with individual norms and values towards making substantive and lasting behavioral change among their fans (i.e., event behavior, everyday life behavior) and within other university sustainability initiatives.

Indirect or Moderation Effects

One advantage of using SEM is the ability to examine indirect and moderating effect within a causal model. With VBN, it is posited that behaviors will be significantly predicted by all variable, but those further down the chain will predict behavior to a lesser extent (e.g. norms > beliefs > values) (Stern et al., 2000). We confirmed this hypothesis for predicting sport event behaviors, but values were the strongest indicator of everyday behavior. This finding has important theoretical contribution as the behaviors best predicted in the flow of the VBN related to the sport and the efforts of the game may have included norm activation specific to sport, whereby everyday behavior changes based on the game may have been influenced by previous values. So when examining behavior with a specific context whether it is energy efficiency with in an organization (e.g. Scherbaum *et al.*, 2008) or behavior at a sports event (this study), the VBN flow predicting behavior may be more predictive for study-specific behaviors.

Conclusion, Limitations, and Future Research

This study modified the VBN model to examine how a collegiate environmental-themed sport event affected environmental behavioral intentions. The results indicate that the educational intervention nature of the *Green Game* was effective in influencing the behavioral intentions of the sport fans suggesting that the setting of a sporting event as an effective medium to educate university stakeholders on environmental issues. The sport context presents a unique medium to engage tens of thousands of college sport fans in non-political public education about environmental protection (NRDC, 2013).

While this study was novel in its attempt to examine sports fan using a theoretical model, some limitations exist. First, as with many cross-sectional studies, an accurate measure of behavior change would be desirable using longitudinal methods. This study examined behavior as an intention based on exposure and attendance at a single educational event. Previous research provides theoretical (Ajzen, 1991) and empirical (Griffeth, Hom, & Gaertner, 2000)

evidence demonstrating that intentions lead to actual behaviors. While we are able to predict behavior, we do not know if it is sustained as the survey was administered the week following the game. Thus, future research should examine the influence of *green games* on actual behavior during the actual *green game* and in subsequent events (e.g., *non-green games*, everyday behaviors).

Additionally, past environmental education literature has been mixed with the inclusion of how to measure norms in the model (Jackson, 2005). While VBN studies have used the NEP, results have found this scale to be negligible in prediction, and relatively long for a survey (15 items). The authors found this to be the case in a study with sport management students in predicting environmental behavior (Casper et al., 2012). Therefore, it was not included in this study.

Another limitation comes from the sample. While the respondents were verified to have attended the game, the sample was mostly limited to season ticket holders and students who willingly chose to complete the study. Non-respondent bias may affect the results, as those that were not as passionate about the survey topic may not have responded. This bias was minimized by offering an incentive for participation and data was found not to be skewed. Another issue that affected response rate and bias was that e-mails corresponding to a season ticket holder could represent more than one seat. As a result, those fans who attended with that ticketholder did not receive an invitation to the study. Future research should recruit participants before the sporting event as a sample to survey pre and post event in order to reduce the effects of response bias. It is hoped that future research will build upon this study and further examine the complicated dimensions of the environmental understanding of sport fans.

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