



# Marketing sustainability through sport: testing the sport sustainability campaign evaluation model

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## ABSTRACT

**Research question:** The sport industry has deepened its commitment to implementing and deploying environmental sustainability initiatives. However, until this study there were no uniform ways to evaluate these efforts. To this end, the purpose of this study is to create and test the sport sustainability campaign evaluation model among sport participants of a 10-mile run event.

**Research methods:** We tested the fit of the sport sustainability campaign evaluation model using 531 participants of a community run.

**Results and Findings:** Needs, values, internal constraints, and points of attachment explained 52.1% of the variance in attitudes toward the campaign. Attitudes, external constraints, past behavior and all of the indirect effects of the other variables combined, explained 74.2% of the variance in participating in sustainability initiatives. Sport professionals can use this model to assess environmental sustainability campaigns and promote attitudinal and sustainable behaviors.

**Implications:** The findings of this study have important implications for sport managers and marketers as they create and further advance their organization's sustainability campaigns. Understanding the needs and values of sport participants can help marketers and managers determine how those needs and values affect positive attitudes towards the campaign. Increasing the positive attitudes towards the campaign, while minimizing the negative influence of external constraints to act sustainably, can increase sustainable behavioral intentions and thus increase the success of the sport organization's sustainability campaign. This model can be used to evaluate the effectiveness of sustainability campaigns to influence attitudes and behaviors of sport participants.

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Environmental sustainability has become a global phenomenon. Dominating news headlines and instigating lively debates concerning the causes of climate change. International conferences, like COP21 in Paris, were organized to create resolutions to reduce human-kind's impact on the natural environment. These discussions echoed prior ones, noting

that the largest challenge to the progression of sustainability endeavors concerned the importance of balancing the ‘quality of life, for everyone in the world, now and for generations to come’ (Grant, 2007, p. 43). In order to meet this challenge, individuals and corporations need to decrease their adverse effects on the natural environment. Despite knowing what needs to happen through sustainable behaviors, what is still unknown is how to get both people and organizations to effectively implement these needed changes.

As recognized by the United Nations Framework Convention on Climate Change (UNFCCC, 2017), sport organizations and events have an inherent advantage and duty in promoting sustainable behaviors by leveraging sport fans’ and participants’ connection with sport (Ottman, 2011; Sartore-Baldwin & McCullough, 2018; Sartore-Baldwin, McCullough, & Quatman-Yates, 2017; Trail & McCullough, 2018). Sport organizations and events have introduced various environmental sustainability initiatives ranging from preliminary efforts of recycling programs to more advanced programs focusing on offsetting carbon emissions (McCullough, Pfahl, & Nguyen, 2016). For example, organizers of running events throughout the world have begun to concentrate on ways to reduce the environmental impact of their respective events (Pattillo, 2017). These initial steps have focused on waste reduction and more sustainable procurement. Mallen, Adams, Stevens, and Thompson (2010) noted that as event organizers progress, they increase the sophistication of initiatives and engage participants more effectively to further reduce the event’s environmental impact by, for example, promoting sustainable behaviors when traveling to the event and communications on how to dispose of waste properly during the event. However, initial research has demonstrated the challenges of engaging sport participants using sustainability campaigns and getting participants to improve their sustainability behaviors both during their sport participation or at home (Brymer, Downey, & Gray, 2009; Dawson, Havitz, & Scott, 2011).

Until recently, no guidelines have been provided for sport organizations/events on how to engage participants to increase sustainable awareness in general, nor how to evaluate campaigns in order to determine how to increase sustainable behaviors. Prior research has examined how physical activity in a nature setting increases sport participants’ environmental awareness (Dawson et al., 2011), and sustainable behavioral intentions (Brymer & Gray, 2010). However, these prior studies did not examine the participants’ responses to actual sustainability initiatives or messaging. Though these studies provide promising results that sport participation can positively influence sustainable behaviors, they do not provide a uniform theoretical model. To fill this void, Trail (2015, 2016) proposed a framework and a model (sport fan sustainability behavior model – SFSB) to help in this endeavor, but that model needs to be tested and expanded to include participants in sport and leisure activities. To this end, the purpose of this study is to create and test a modification of Trail’s model that we title the sport sustainability campaign evaluation model (SSCEM). We assess this model using participants of a highly-desirable 10-mile run event (we will refer to it as ‘The Run’) located in the upper South Atlantic region of the United States. The Run has featured environmental sustainability initiatives for several years and received certification from the Council for Responsible Sport the last three years for their efforts. As a point of transparency the Sustainability Coordinator of The Run approached us to help enhance their sustainability efforts through an evaluation of their runner engagement, specific to two initiatives (i.e. waste, carbon offsets).

### Theoretical background

Trail’s (2015, 2016) SFSB (Figure 1) was based on a variety of theories and existing frameworks: theory of planned behavior (Ajzen & Madden, 1986); the attitude-behavior-context model (Guagnano, Stern, & Dietz, 1995); the motivation-opportunity-ability model (MacInnis & Jaworski, 1989); value-belief-norm model (Stern, Dietz, Abel, Guagnano,

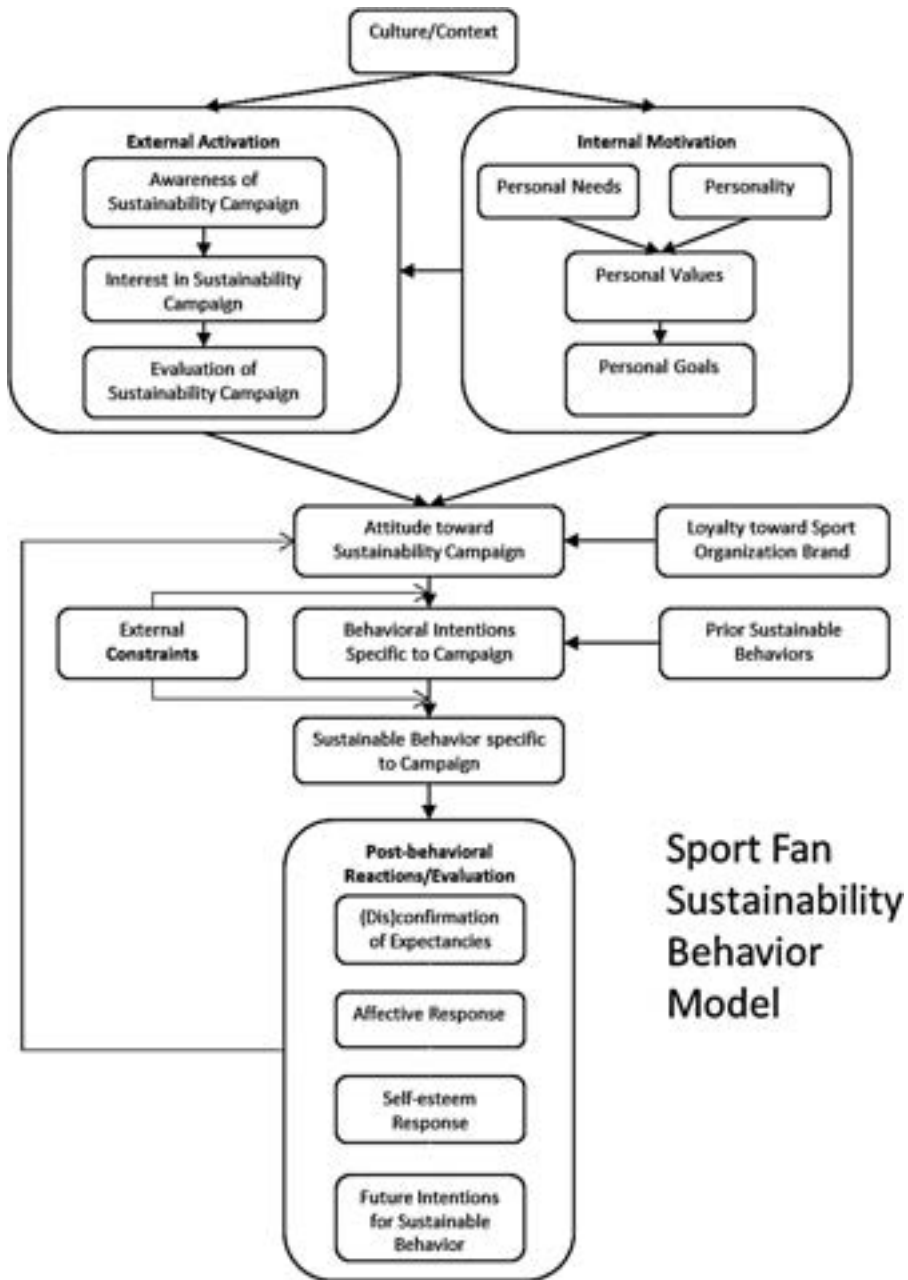


Figure 1. Sport fan sustainability behavior model.

& Kalof, 1999); identity theory (Stryker & Burke, 2000); model of sustainability behavior (Belz & Peattie, 2012); and model of sport consumer behavior (Trail & James, 2015). However, in our current study, we are not testing Trail's full SFSB model and we are modifying his model slightly to make it more general to take into account the change in focus from fans/spectators of a sports team to participants of a sport event (e.g. The Run). Thus, not all the aforementioned theories and models are applicable, but we will discuss the ones that provide the framework for our modified model (SSCEM; Figure 2). Furthermore, there are several theories that we will include that support proposed relationships that were not included in Trail's (2015, 2016) research but are applicable and were referred to by Trail and James (2015): self-determination theory (SDT; Deci & Ryan, 2008) and constraints theory (Crawford & Godbey, 1987; Kim & Trail, 2010).

As depicted in Figure 2 (SSCEM), we propose that needs, values, and points of attachment influence attitudes toward the sustainability campaign. This is like the SFSB, however, Trail (2015, 2016) did not provide adequate support for the inclusion of personality and personal goals in the SFSB, so we did not include them in the SSCEM. Trail (2015) also suggested that loyalty toward the sport organization brand would impact attitudes. We expanded that to multiple points of attachment (a similar concept). Furthermore, we propose that internal constraints will have a negative influence on attitudes, which was not included in Trail's SFSB. Attitudes, in turn, will influence intention to participate in the campaign. However, intentions will also be influenced by past sustainable behaviors and external constraints. These relationships are the same as those in the SFSB. However, the SFSB also included the actual behaviors and post-behavioral reactions and evaluations, which we do not include because of the cross-sectional nature of our study. Lastly, Trail (2015, 2016) included both culture/context and external activation

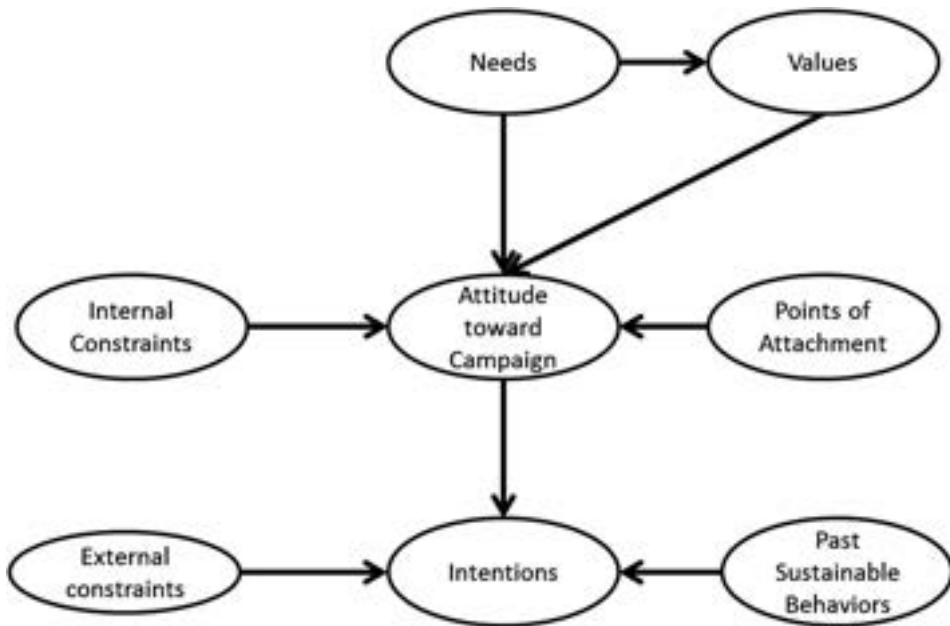


Figure 2. Sport sustainability campaign evaluation model.

in the SFSB, which we did not include in the SSCEM for a couple of reasons. First, Trail (2015, 2016) suggested that culture/context would have a predictive relationship with internal motivation and external activation; however, we feel that the variables (demographics) that he included in that dimension would be moderators of the model and not predictors. Thus, we excluded those for the time being to test a more simplified model before testing a more complex one. Second, awareness, in the external activation component of the SFSB would also be a moderator, thus it was not included either for the above reason.

Because the context of our model (SSCEM) is participating in a sport event, it differs from the context of the SFSB, which is spectating at a game. Thus, although the components in each model are generally the same (e.g. needs and values), the focal points of other components need to be adjusted from a spectator-based context to a participant-based context. For example, as noted above, we had to expand the loyalty toward a sport brand component to a multi-dimensional points-of-attachment component that includes attachment to the event, to the sport behavior, to the community, and to the environment. In addition, although internal and external constraints are relevant in both contexts, the specific types of constraints would differ based on the context (spectating vs. participating; e.g. the physical aspect of participating, which is typically not relevant to spectating). Below we discuss all of the components of the SSCEM in more detail.

## **Needs**

Needs are defined as a ‘deficit state of the organism that recurs periodically and that [have] a specific requirement for [their] satisfaction’ (Gordon, 1975, p. 8). Maslow (1943) differentiated needs into physiological, safety, belongingness, esteem, and self-actualization need categories in ascending levels. Trail (2016), using Maslow’s hierarchy, identified specific needs for each level. Physical well-being needs comprised Maslow’s physiological category. Trail suggested that personal-safety needs and financial security needs would be encapsulated in Maslow’s safety-needs level. Family togetherness, mature love, companionship, and social acceptance, according to Trail (2016), fit within Maslow’s belongingness-needs level. Trail (2016) also proposed that the needs for prosperity, achievement, and power, would fit within the esteem-needs level in Maslow’s hierarchy and that the needs for wisdom, inner peace, curiosity, and stimulation fit in the self-actualization category.

According to Deci and Ryan’s (2008) self-determination theory and Rokeach’s (1973) values theory, needs influence values and attitudes. From the SDT perspective, needs provide a ‘means of understanding how various social forces and interpersonal environments affect ... motivation’ (p. 183). In other words, needs interact with cultural, contextual, and interpersonal situations, which develop personal values and attitudes within individuals. Similarly, Rokeach suggested that satisfaction of lower level needs (see Maslow, 1943) allows the development of values and attitudes. In addition, in MacInnis and Jaworski’s (1989) motivation-opportunity-ability (MOA) model, needs lead to motivation, which leads to attitudes, moderated and mediated by a variety of variables. Although we disagree with MacInnis and Jaworski that needs lead to motivation (we believe that needs are motives), we do agree that needs lead to values and attitudes. Trail (2016) reported support for the needs-to-values relationship among specific needs and values.

For example, he found that physical well-being, wisdom, inner peace, and companionship needs moderately influenced environmentalism values. Trail also found that personal safety, companionship, and mature love needs influenced benevolence and social equality values. Companionship and social acceptance needs also affected global peace and tolerance values, while family togetherness needs also affected tolerance values. This shows that needs and values are related. Thus, we propose

**Hypothesis 1:** Needs will influence values.

As noted above, in Deci and Ryan's (2008) SDT, needs influence attitudes (emotion), but they don't specifically say that the relationship is a direct one. Rokeach and Ball-Rokeach (1989) noted that needs impact values, which influence attitudes. This implies a mediated relationship. Although Trail (2016) did not report any relationships between needs and attitudes, almost all the direct relationships between needs and sustainability *intentions* were not significant. However, there were a couple exceptions (discussed below). In addition, most of the needs-to-intentions relationships were mediated by values. Due to the conflicting previous research, we propose

**Hypothesis 2:** There may be a direct relationship between needs and sustainability attitudes, however, there may also be an indirect relationship, partially mediated by values.

## Values

Rokeach (1973) defined a value as 'an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence' (p. 5). Trail and James (2015), based on Schwartz (1992) and Rokeach (1973), suggested that values are hierarchically ordered, meaning that some values transcend situations whereas other values may be specific to certain situations only.

Both Rokeach (1973) and Sagiv and Schwartz (2000) noted that values influence attitudes and Stryker and Burke (2000), using identity theory, suggested that values lead to attitudes. Specifically, Sagiv and Schwartz noted that 'values are desirable goals ... that serve as guiding principles in people's lives' (p. 178); that is, based on the individual's value system, he/she forms specific attitudes relative to a focal construct congruent with those values. Similarly, Stryker and Burke suggested that values guide standards for behavior and affect attitudes because people need a framework that fits within the roles they ascribe for themselves. In addition, Stern et al. (1999) in their value-belief-norm (VBN) model proposed that values influenced attitudes (e.g. worldview, ascription of responsibilities, personal norms). Furthermore, specific to sustainability research, Belz and Peattie (2012) noted that values 'will determine the social and environmental issues that we respond to and the extent to which we are willing to change our consumption behaviors in response' (p. 88). Although Trail (2016) did not test relationships between values and attitudes, he did find that the values of environmentalism, global peace, aesthetics, social equality, tolerance, and benevolence were related to intentions to increase sustainable behaviors. Similarly, using the VBN, Casper, Pfahl, and McCullough (2014) found that environmentalism values were related to sustainability intentions. Based on this support, we propose

**Hypothesis 3:** Values will influence sustainability attitudes.

### **Points of attachment**

Trail and colleagues (Robinson & Trail, 2005; Trail, Robinson, Dick, & Gillentine, 2003) coined the term points of attachment. Points of attachment refer to the different role identities (identity theory; Stryker & Burke, 2000) that an individual could have referent to sport. For example, the best-known role identity would probably be a fan of a favorite team. Within identity theory (Stryker & Burke, 2000), role identities are referred to as identity standards. For the purposes of this research, we define points of attachment as the different role identities (identity standards) that are salient relative to the specific event. Specifically, we focus on community identity (regional community identity where The Run takes place), The Run identity (attachment to this specific run), runner identity (running being central to one's self-concept, similar to exercise identity, e.g. Anderson & Cychoz, 1994), and environmentalist identity (seeing one's self as an environmentalist, similar to the concept of ecological self; Ingalsbee, 1996). The Run (and running), in this research, is used as a context; thus, runner identity and attachment in research such as Bunds, Brandon-Lai, and Armstrong (2016) and Filo and colleagues' (Filo, Funk, & O'Brien, 2009; Filo, Groza, & Fairley, 2012) research is tangential, and not the focus of this study.

Stryker and Burke (2000) espoused that the identity standard (role) influences cognitive comparisons within the individual. Cognitive comparisons are beliefs or attitudes about how an individual should behave in specific situations contingent upon their role identity. Trail (2015, 2016) proposed in his model of sport fan sustainability behavior that external activation and internal motivation influenced the attitude toward the sustainability campaign, but this attitude was also impacted by loyalty to the sport organization (or brand) and other points of attachment. Using the above information as support, we propose

**Hypothesis 4:** Points of attachment will influence attitude toward a sustainability campaign.

### **Internal constraints**

However, even though someone may have needs, values, and points of attachment that may positively influence an attitude toward a sustainability campaign, there may exist negative factors that also influence the attitude. These are often called barriers or constraints. Trail and James (2015) defined constraints as 'factors (or reasons) that prevent or prohibit an individual from participating and enjoying some activity' (p. 238). Although Crawford and Godbey (1987) proposed that there were three main categories of constraints, Kim and Trail (2011) proposed and tested a model that included both internal and external constraints and internal and external motivators. We feel that these ideas are reflected in the model we are testing in this project as we have both internal and external constraints in our model (Figure 2) and internal motivators (needs, values, and points of attachment). However, we did not include external motivators in this model, although they are in Trail's SFSB (2015, 2016). For the current model, we included several internal constraints from prior research (Kim & Trail, 2011) including lack of interest, lack of knowledge, and lack of interest from others. We also created a new subset that we labeled lack of worth (value) that focused on the idea that certain sustainable behaviors are not worthwhile. This sentiment was shared by participants in McCullough's (2013) work examining sustainable behaviors of sport spectators.



Kim and Trail (2010, 2011) showed that constraints influence behavioral intentions and Larkin, Fink, and Trail (2015) determined that constraints negatively influenced sports media consumption substitution intentions. Within sustainability research, McCullough and Cunningham (2011) found that subjective norms (similar to internal constraints) were correlated with attitudes. That is, as the individual perceived that others were not supportive of their recycling behaviors, they were less likely to have positive attitudes toward recycling. Extrapolating these results, we propose

**Hypothesis 5:** Internal constraints will negatively influence attitudes toward a sustainability campaign.

### **Attitudes**

Attitudes are defined as psychological tendencies that are ‘expressed by evaluating a particular entity with some degree of favor or disfavor’ (Eagly & Chaiken, 1993, p. 1). Ajzen and Madden (1986), related to the theory of planned behavior, noted that attitudes lead to intentions. Similarly, Stryker and Burke (2000) in identity theory, purported that attitudes (emotional responses) lead to behaviors (or behavioral intentions in our case). Within sport, a variety of studies have shown that attitudes lead to intentions (e.g. Biscaia, Correia, Ross, Rosado, & Marôco, 2013; Song & Park, 2015). In sustainability research, Belz and Peattie’s (2012) sustainability framework indicates that attitudes and intentions are related. Furthermore, McCullough and Cunningham (2011) using the TPB (Ajzen & Madden, 1986) to examine behavioral intentions of sport spectators did not find that attitudes predicted sustainability behavior intentions. Despite the lack of support from McCullough and Cunningham, we propose

**Hypothesis 6:** Attitudes toward the sustainability campaign will lead to behavioral intentions specific to sustainability.

### **External constraints**

However, as both Guagnano et al. (1995), in their attitude-behavior-context model and Trail and James (2015) suggest, attitudes are not the sole predictors of intentions. Guagnano et al. noted that attitudes interact with external conditions to cause behavior and Trail and James suggested that attitudes influence intentions, but the relationship is moderated by external constraints. Similarly, Belz and Peattie (2012) within their model of sustainability predicted that social and structural contexts influence consumer factors and purchase factors (e.g. behavioral intentions). Similar to internal constraints, external constraints are barriers, and Kim and Trail (2010) defined them as ‘social or environmental aspects that prevent or decrease the likelihood of the individual performing the behavior (e.g. cost, weather, lack of transportation)’ (p. 194). Within our current research though, only three external constraints were applicable and those were cost, lack of time, and lack of access. External constraints have been shown to impact behavioral intentions in sport and leisure (Jun & Kyle, 2011; Kim & Trail, 2010, 2011; Pritchard, Funk, & Alexandris, 2009). In addition, McCullough and Cunningham (2011) found that as time was perceived as a constraint, intentions to recycle decreased. Therefore, we propose



**Hypothesis 7:** External constraints will negatively influence sustainable behavioral intentions.

Past behaviors typically predict future behaviors and behavioral intentions as per Ajzen (1991; theory of planned behavior), Eagly and Chaiken (1993), and Dean, Raats, and Shepherd (2012). Smith and colleagues noted that past behavior is often ‘the strongest predictor of self-reported intentions’ (Smith et al., 2008, p. 315). Within sport, Shapiro, Ridinger, and Trail (2013) found that past behavior predicted behavioral intentions well, as did Trail, Anderson, and Lee (2006). Within the sustainability context, Belz and Peattie (2012) concurred, and Trail (2015, 2016) proposed that relationship within the sport fan sustainability behavior model. Furthermore, McCullough and Cunningham (2011) found that past recycling behaviors predicted future recycling intentions. Based on this information, we propose

**Hypothesis 8:** Past sustainable behaviors will predict sustainable behavior intentions.

### ***Behavioral intentions***

Behavioral intentions are defined as actions that the individual intends to do. Specific to our research here, we focused on sustainable behavior intentions relative to two initiatives promoted by The Run; specifically, recycling and waste diversion behavior during The Run and buying carbon offsets specific to The Run. In addition, we included buying carbon offsets in general. As noted above, attitudes, external constraints, and past behaviors are all predicted to influence behavioral intentions.

### ***Theoretical framework summary***

In sum, we are proposing a model of sport sustainability in which needs and values predict attitudes about the sustainability campaign, along with internal constraints and points of attachment. In turn, attitudes about the campaign predict intentions to act in a sustainable manner, but intentions are also influenced by external constraints and past sustainable behaviors (Figure 2). Thus, our purpose is to test the model and each of the specific hypotheses.

### ***Method***

Located in the upper South Atlantic region of the United States, The Run itself has existed for decades, but it has only been over the last several years that The Run has focused on sustainability, and in each of the last three years has achieved the Gold Standard awarded by the Council for Responsible Sport. Although The Run promotes many different aspects of sustainability, the two specific ones that were the focal points of this research and of interest to the Sustainability Coordinator of The Run were (1) to encourage participants to purchase carbon offsets and (2) to divert waste from the landfill (either through recycling, composting, reusing, etc.). Participants of The Run enter into an annual lottery for the ability to register and participate in the 10-mile race. Event organizers sought to determine if their sustainability initiatives were effective and resonating with their participants. As a result, the Sustainability

Coordinator reached out to us and we worked with them to assess their sustainability initiatives messaging through the application of the SSCEM.

### **Sample and procedure**

The Run emailed the survey link to our questionnaire (hosted on Qualtrics) to over 17,000 people in The Run's database and posted the link on The Run's official Facebook page two weeks before the event. They sent two reminder emails approximately 5 and 10 days after the initial email and posting. We closed the survey a couple hours before The Run started. We asked participants to complete the survey corresponding to the environmental sustainability efforts promoted by The Run before the 2016 Run. The Run provided incentives to participants to complete the entire questionnaire by being entered into a raffle for one of three guaranteed admissions into the 2017 Run. This was deemed an appropriate incentive because The Run chooses participants through an annual lottery, which is highly competitive.

In total, 746 people responded to the survey (slightly under a 5% response rate), and complete data were collected from 531 participants. Of the completed surveys, 112 people selected female (21.1%) and 419 selected male (78.9%). Most of the participants had completed college ( $N=211$ , 39.7%) or had earned a graduate degree ( $N=291$ , 54.8%); whereas, only 28 participants had not (5.2%). On average, participants reported a household income of \$98,750. To test for non-response bias, we assessed whether those that completed the survey before the final emailed reminder and the approximate 10% who completed the survey on the final day differed on any demographic variable. We found no significant differences between the two groups on sex, level of education, household income, or distance traveled to the run. The research was approved by our Institutional Review Board.

### **Questionnaire**

The questionnaire was comprised of eight content areas: Needs, Values, Attitude toward the Campaign, Points of Attachment, Internal Constraints, External Constraints, Sustainable Behavior Intentions, and Past Sustainable Behaviors. Due to the length of the questionnaire and the concerns of the client, we chose single items from prior subscales for most constructs rather than the multi-item subscales. There are theoretical and practical reasons both for and against the use of single-item measures rather than multi-item measures (Ang & Eisend, 2018; Diamantopoulos, Sarstedt, Fuchs, Wilczynski, & Kaiser, 2012; Kwon & Trail, 2005; Sarstedt & Wilczynski, 2009). Obviously, we chose single-item measures because of the practical benefits. However, some of the concerns regarding the theoretical aspects of using single-item measures were attenuated by using items from previously tested scales (or subscales) that were the highest loaders on their specific factors in the previous research (see Diamantopoulos et al. for a discussion of this possibility). In addition, most of the items used came from subscales that had high internal consistency and construct reliability values, thus minimizing reliability and construct validity concerns. Other concerns about single-item measures such as segmentation tasks, missing values, and response behavior (Sarstedt & Wilczynski, 2009) are not applicable (i.e. we did not segment the respondents, we eliminated all respondents with missing values,

and single items are unlikely to have confounding effects for response behaviors). In addition, because we were not interested in how specific values, needs, constraints, etc., influenced other specific variables (i.e. explained variance in outcome variables), and were only interested in whether the model fit well and whether the general constructs were related to each other; the concern about reduced explanatory variance was minimized. Thus, we felt that the use of single item measures would not be detrimental to this project (as per Ang & Eisend).

To measure needs, we used the most representative item (highest factor loader) from each subscale in Trail's (2016) research, and only included those that had an impact on either Values, Attitudes, or Behavioral Intentions. This process generated 10 items representing needs for our current research (physical fitness, personal safety, financial security, true friendship, social acceptance, intimacy, family togetherness, wisdom, inner peace, and curiosity; see Table 1 for wording). The values items were generated similarly. They originally came from the Lee and Trail (2011) research, but were based on Schwartz's Values Survey (Schwartz, 1992), and were also used in the Trail (2016) project. Again though, we selected single items for this project, representing the following values: environmentalism, kindness, social justice, global peace, tolerance, and aesthetics. Both the needs and values items were measured on a 9-point scale, with 1 = Opposed to my Needs/Values, 2 = Not Important, 5 = Important, 8 = Very Important, and 9 = Of Supreme Importance (similar to Schwartz, 1992).

The Points of Attachment construct included four very distinct items. One item represented community attachment (e.g. Robinson & Trail, 2005). The second item represented the attachment to The Run itself, similar to the idea of team identification (Trail et al., 2003). The third item focused on running being a central component of one's self-concept (similar to Anderson and Cychosz's (1994) idea of exercise identity). The final item represented the role identity of being an environmentalist (similar to the concept of ecological self; Ingalsbee, 1996).

We maintained the constructs representing internal constraints from Kim and Trail (2010), for example Lack of Knowledge and Lack-of-Interest-from-Others, but modified the focal point of the items in those subscales to represent sustainability in general and the specific context of this run (i.e. 'I don't understand what the term waste diversion means' and 'I don't understand why The Run is worried about diverting waste from the landfill'). We also included items to assess lack of worth; that is, how valuable (or not) certain sustainable behaviors or aspects were (modified from Pritchard et al. (2009) to be specific to sustainability). Finally, we also included two items that represented a lack of interest in acting sustainably (modified from Alexandris & Stodolska, 2004). The items were comprehensively representative of internal constraints, and not reflective of any first-order latent variables. We worded all items negatively.

To measure Attitude toward the Campaign, we created four items that assessed specific attitudes toward the two campaigns that the client was most interested in (reducing carbon footprint and waste diversion). We also included two general items assessing attitude toward The Run encouraging sustainable behavior and inspiring people to be more environmentally friendly.

We maintained two of the items measuring external constraints from Kim and Trail's (2010) research: cost (which we refocused on carbon offsets), and lack-of-time (which we refocused on finding a waste receptacle) rather than fandom aspects. We created three

**Table 1.** Loadings of items on constructs.

	$\beta$	<i>CI</i>	<i>SE</i>	<i>t</i>	<i>M</i>
<b>Needs</b>					
Physical fitness – being physically fit, in shape	.377	.309–.444	.041	9.13	7.8
Personal safety – feeling protected and secure	.529	.471–.588	.035	14.93	7.3
Financial security – being secure in my personal financial standing	.511	.452–.571	.036	14.12	7.5
True friendship – the mutual feelings of trust and affection between friends	.655	.607–.703	.029	22.29	7.6
Social acceptance – feelings that I belong in a group or groups	.286	.214–.358	.044	6.55	5.5
Intimacy – having a deep emotional, loving, intimate relationship with another	.637	.588–.687	.030	21.03	7.4
Family togetherness – having a family that enjoys each other's company	.544	.486–.601	.035	21.03	7.7
Wisdom – accumulated knowledge of life gained through experience	.640	.590–.689	.030	21.19	7.4
Inner peace – at peace with one's self and life	.671	.624–.718	.029	23.46	7.5
Curiosity – interested in everything, exploring	.609	.556–.661	.032	19.17	7.2
<b>Values</b>					
Environmentalism – protecting the environment	.636	.588–.683	.029	22.11	7.1
Kindness – being sympathetic and compassionate	.667	.622–.711	.027	24.63	7.9
Social justice – fair and dignified treatment of all people within society	.845	.818–.872	.017	51.06	7.7
Global peace – freedom from war and conflict	.804	.772–.835	.019	42.31	7.2
Tolerance – accepting differing views of other people and treating them fairly	.782	.748–.815	.020	38.47	7.7
Aesthetics – being appreciative of beautiful things in life	.564	.511–.617	.032	17.41	6.7
<b>Attitudes</b>					
I like that the (name) Run is trying to reduce people's carbon footprint.	.613	.563–.662	.030	20.43	6.0
I like that the (name) Run is trying to encourage people to recycle.	.680	.637–.723	.026	25.79	6.3
I like that the (name) Run is encouraging people to act more sustainably.	.875	.850–.900	.015	56.86	6.4
I like that the (name) Run is inspiring people to be more environmentally friendly.	.826	.797–.856	.018	46.05	6.3
<b>Points of Attachment</b>					
I feel connected to numerous aspects in the (name) metro community.	.263	.186–.341	.047	5.61	5.0
I am very attached to the (name) Run.	.243	.166–.321	.047	5.15	5.1
Running is a central component of my self-concept.	.354	.280–.429	.045	7.81	5.6
I see myself as an environmentalist.	.628	.555–.701	.044	14.13	4.7
<b>Internal Constraints</b>					
I don't understand what the term 'Sustainable' means when applied to a race like the (name) Run.	.514	.456–.572	.035	14.63	2.6
I don't know what carbon offsets are.	.562	.508–.616	.033	17.04	2.6
I don't know how to purchase a carbon offset for the (name) Run.	.271	.200–.342	.043	6.26	3.3
I don't understand what the term waste diversion means.	.654	.607–.700	.028	23.08	2.4
I don't know how to appropriately dispose of my wrappers when I'm running the race.	.340	.272–.409	.041	8.21	2.5
I don't think carbon offsets are valuable.	.540	.484–.595	.034	15.86	3.0
I don't understand why The Run is worried about diverting waste from the landfill.	.684	.640–.728	.027	25.65	1.9
I don't think recycling is worthwhile.	.463	.402–.524	.037	12.43	1.6
Acting in an environmentally friendly way won't improve the environment enough to make a difference	.515	.457–.573	.035	14.67	2.1
My family is not interested in acting sustainably.	.553	.498–.608	.033	16.55	2.3
My significant other is not interested in acting sustainably	.472	.411–.533	.037	12.78	2.8
My friends are not interested in acting sustainably.	.518	.461–.576	.035	14.82	2.8
I have no interest in purchasing carbon offsets.	.469	.408–.530	.037	12.66	2.6
I have no interest in diverting my waste from the landfill.	.646	.598–.693	.029	22.46	2.6
<b>External Constraints</b>					
The carbon offsets for the (name) Run cost too much.	.278	.202–.353	.046	6.06	3.6
I don't have time to find a waste receptacle when I'm running the race.	.775	.728–.822	.029	27.07	3.2
When running the (name), there are no easily accessible waste receptacles along the course.	.440	.372–.508	.041	10.70	3.5
It is just easier to throw my wrappers on the ground when running than to look for a waste receptacle.	.699	.647–.750	.031	22.46	2.8
I know if I throw my wrappers/cups on the ground during The Run, race workers will pick them up for me.	.517	.454–.580	.038	13.51	4.6

*(Continued)*

**Table 1.** Continued.

	$\beta$	<i>CI</i>	<i>SE</i>	<i>t</i>	<i>M</i>
<b>Intentions</b>					
I intend to buy carbon offsets in the future, if I need to take a personal vehicle to the (name) run.	.510	.448–.571	.037	13.60	4.1
In general, I am likely to buy carbon offsets in the future.	.505	.443–.567	.038	13.41	4.0
The next time I participate in the (name) Run I will make sure to recycle all of my waste.	.719	.672–.766	.028	25.36	6.2
The next time I participate in the (name) Run I will make sure to dispose of my wrappers/cups in an appropriate receptacle.	.663	.613–.714	.031	21.60	6.4
<b>Past Behavior</b>					
How many times have you run the (name) Run before?	.261	.166–.357	.058	4.51	1.5
How many times have you purchased a carbon offset before (for any reason)?	.518	.402–.635	.071	7.31	0.7
How many times have you purchased a carbon offset for the (name) Run before?	.635	.502–.769	.081	7.85	0.1
Approximately what percentage of the time do you recycle material that is recyclable?	.103	.006–.199	.059	1.75	80.5%
Approximately what percentage of time do you compost material that is compostable?	.166	.070–.262	.058	2.84	24.9%
In general, during runs/races, approximately what percentage of the time do you throw your waste on the ground while running?	–.081	–.178–.016	.059	–1.38	18.9%
In general, at the end of races, approximately what percentage of time do you place any of your leftover waste in the appropriate containers?	.031	–.066–.128	.059	0.05	91.7%

lack-of-access items for this project based on the general concept of lack of access from Pritchard et al. (2009).

We also created four items measuring sustainable behavior intentions. The first two items focused on buying carbon offsets in the future; one specific to The Run, and one in general. The last two items focused on intentions to recycle and dispose of waste correctly during future Runs.

All of the items in these five scales (Attitude, Attachment, both Constraints, and Intentions) were measured on a 7-point Likert-type scale, with 1 = Strongly Disagree to 7 = Strongly Agree. Lastly, the items measuring Past Behavior included an item measuring the number of times the individual previously participated in The Run. We also included two items assessing the number of times the respondent purchased carbon-offsets previously, one specific to The Run and one in general. We included two items assessing general recycling and composting behavior (as a percentage of opportunities). Finally, we included two items measuring waste diversion behavior during runs (again as a percentage of opportunities; see Table 1). The final section included demographic questions. In its entirety, the number of items included in this analysis, specific to the model (not including demographic items) was 44.

## Results

The variables in our model were normally distributed, except for past behaviors regarding carbon offset purchases, which apparently no one purchased. Measures of magnitude (means and percentages) are reported in Table 1. We used the RAMONA program in SYSTAT 11.0 to analyze the Structural Equation Model depicted in Figure 2. Because SEM using ML is relatively robust regarding non-normality of variables and we only had two (out of 44) variables that were not normally distributed, we were confident in running the SEM. We did not test a measurement model (CFA) prior to testing the

**Table 2.** Path coefficients in the sport sustainability campaign evaluation model.

		$\beta$	CI	SE	t
Needs → Values	Hypothesis 1 supported	.558	.496–.619	.037	14.99
Needs → Attitudes	Hypothesis 2 partially supported	-.051	-.198 to -.097	.090	-0.57
Values → Attitudes	Hypothesis 3 supported	.239	.159–.319	.049	4.90
Points of Attachment → Attitudes	Hypothesis 4 partially supported	.420	-.015–.854	.264	1.59
Internal Constraints → Attitudes	Hypothesis 5 not supported	-.260	-.634–.115	.227	-1.14
Attitudes → Sustainability Intentions	Hypothesis 6 supported	.589	.525–.654	.039	15.06
External Constraints → Sustainability Intentions	Hypothesis 7 supported	-.462	-.534 to -.390	.044	-10.56
Past Sustainability Behaviors → Sustainability Intentions	Hypothesis 8 partially supported	.152	.068–.237	.051	2.96

structural model because we did not have multi-item measures of manifest variables (i.e. we did not have multiple items measuring attachment to the Run or benevolence values, etc.), but only single item measures representing each manifest variable (e.g. one item measuring community attachment or need for inner peace, etc.). Each of the single items loaded directly on what would normally be considered 2nd order latent variables, but in this case were 1st order latent variables (e.g. Needs, Values, Attitudes, etc.). The structural model fit the data well ( $\chi^2/df = 4428.95/1363 = 3.249$ ; RMSEA = .065; CI .063–.067; 4.47% of residuals > .1; ECVI = 8.817, CI 8.44–9.204). The path coefficients are presented in Table 2. Needs, as a whole, explained 31.1% of the variance in Values. Needs, Values, Points of Attachment, and Internal Constraints explained a total of 52.1% of the variance in Attitudes toward the Campaign. Attitudes, External Constraints, Past Behavior and all the indirect effects of the other variables combined, explained 74.2% of the variance in Sustainable Behavior Intentions. Support (or lack therein) for the specific hypotheses is shown in Table 2.

## Discussion

The purpose of the current study was to evaluate the sport sustainability campaign evaluation model (SSCEM; Figure 2) on sport participants in a 10-mile run event. The SSCEM included prior research using the TPB (Ajzen & Madden, 1986; McCullough, 2013; McCullough & Cunningham, 2011) and the value-belief-norm model (Casper et al., 2014; Casper, Pfahl, & McCullough, 2017; Stern et al., 1999). The model also included aspects from additional models and theories including the attitude-behavior-context model (Guagnano et al., 1995); the motivation-opportunity-ability model (MacInnis & Jaworski, 1989); identity theory (Stryker & Burke, 2000); model of sustainability behavior (Belz & Peattie, 2012); the model of sport consumer behavior (Trail & James, 2015), self-determination theory (SDT; Deci & Ryan, 2008) and constraints theory (Crawford & Godbey, 1987; Kim & Trail, 2010). Ultimately, we created the SSCEM to examine the needs, values, internal constraints, external constraints, points of attachment, and attitudes of sport participants so we could assess the impact of The Run's environmental sustainability campaign. The new model had higher predictive power of behavioral intentions than most of the aforementioned sustainability studies, while including additional variables (personal needs, values, internal constraints and points of attachment) that hadn't been specifically examined before.



We demonstrated that, in general, the results supported the SSCEM and four of the eight hypotheses we proposed (Table 2). In addition, three of the remaining hypotheses were partially supported, and only one was not supported. We found that needs (indirectly) and values (directly) predict attitudes about the sustainability campaign, along with points of attachment (to some extent). In turn, attitudes about the campaign predict intentions to act in a sustainable manner, but intentions are also influenced by external constraints and past sustainable behaviors (Table 2).

Specifically, we found support for Hypothesis 1. Needs explained slightly more than 30% of the variance in values, supporting Maslow's (1943) hierarchy of needs, Deci and Ryan's (2008) self-determination theory and Rokeach's (1973) value theory. In addition, we found support for Trail's (2016) recent research on needs and values. In addition, our results partially support Hypothesis 2 in that the indirect relationship between needs and sustainability attitudes would be significant. The indirect relationship between needs and attitudes, was fully mediated by values, which was consistent with Deci and Ryan's (2008) SDT and Rokeach and Ball-Rokeach's (1989) research. Prior research has demonstrated mixed results regarding the direct relationship between needs and attitudes, but specific to sustainable behaviors, needs do not seem to be directly related to sustainable attitudes, which did not support our hypothesis.

We found that values are significantly related to sustainable attitudes supporting Hypothesis 3. This finding supports prior research by Rokeach (1973), Sagiv and Schwartz (2000), and Stryker and Burke (2000) demonstrating that values lead to attitudes. To some extent, this also supports Casper et al.'s (2014) results. Using the VBN, they found that environmentalism values were related to sustainability intentions, which are typically mediated by attitudes. Further, we found points of attachment explained a fair amount of the variance (almost 18%) in attitude towards The Run's sustainability campaign; however, the confidence interval (CI) was very large (-.015-.854) and included zero. This, and the t-value, indicate that it was not a significant finding, providing conflicting information as to the support for Hypothesis 4. The large CI indicates that the actual path coefficient could vary dramatically. This is probably due to the varied path coefficients of the different points of attachment. A non-significant finding such as this conflicts with both prior conceptual (McCullough & Kellison, 2016; Stryker & Burke, 2000; Trail, 2015, 2016) and empirical research (Trail & James, 2015) that an individual's connection or affiliation with a sport entity can influence positive behavior by leveraging their identity to the specific sport entity. In addition, it is important to include multiple points of attachment, as different ones are important to different people, as is indicated by the mean scores.

The data from the study did not support Hypothesis 5, which posited that internal constraints negatively influence attitudes toward a sustainability campaign. Once again, the large confidence interval indicates that path coefficients could vary substantially, probably due to the many varied loadings of the items on the latent construct. Therefore, even though Kim and Trail (2010, 2011) showed that constraints negatively influence behavioral intentions and McCullough and Cunningham (2011) found that negative subjective norms (similar to internal constraints) negatively influenced sustainability attitudes, our results do not support those findings. Considering the large CI in our results, it is more likely that the aforementioned research is correct rather than ours.



The results from the current study support Hypothesis 6, indicating that attitudes toward the sustainability campaign lead to behavioral intentions specific to sustainability. This supports the TPB (Ajzen, 1991) that positive attitudes of specific actions may encourage behavioral intentions. For example, Casper and Pfahl (2012) found that environmental attitudes significantly predicted sustainable behavioral intentions at a sporting event. While other research, by McCullough and Cunningham (2011) also based on the TPB, did not find attitudes significantly predicted behavioral intentions, in this data we did. Their results were probably impacted by the poor reliability of their attitude construct.

Furthermore, we found that external constraints negatively influenced sustainable behavioral intentions as proposed in Hypothesis 7, supporting Belz and Peattie's (2012) predictions that social contexts and structural limitations can negatively influence behaviors. We found that cost, lack-of-time, and lack-of-access were significant in negatively influencing sustainable behaviors, also consistent with previous work by McCullough and Cunningham (2011).

Lastly, Hypothesis 8 was only partially supported. Although the results showing that past sustainable behaviors significantly predicted sustainable behavior intentions, the amount of variance explained (less than 3%) was not meaningful (see Cohen, 1988, for a discussion on meaningfulness). This does not support prior theory (Ajzen, 1991; Dean et al., 2012; Eagly & Chaiken, 1993) whose authors proposed/showed that previous behaviors are a strong predictor of future behaviors. Additionally, this finding does not support prior research that demonstrated that previous recycling behaviors significantly predicted behavioral intentions to act sustainably at sporting events (McCullough & Cunningham, 2011). These different findings might be explained because some of the past-behaviors items used in this study did not have corresponding future intentions items. For example, the composting item in the past behavior subscale did not have a corresponding 'composting' item in the in future intentions subscale. Similarly, the past behavior item asking how many times the participant had participated in The Run before did not have a corresponding item in the intention subscale. However, our objective for this study was to examine the fit of the model and not to maximize variance explained.

In summary, the fit of the model in this study greatly advances the research into understanding sustainable attitudes and behaviors of sport organization's environmental sustainability campaigns. That is, the SSCEM explains more variance than the general models used in prior research (Casper et al., 2014; McCullough & Cunningham, 2011). The nuanced SSCEM is supported by prior research suggesting that sport sustainability behaviors are unlike previously researched behaviors (e.g. workplace, household, everyday sustainable behaviors; McCullough, 2013; McCullough & Cunningham, 2011).

### **Implications**

The findings of this study have important implications for sport managers and marketers as they create and further advance their organization's sustainability campaigns. As mentioned, before this study there were no known ways to evaluate sport sustainability campaigns. This gap presents challenges for the advancement of authentic and worthwhile sustainability campaigns within the industry. This study begins to fill that gap for sport managers as they begin to evaluate the ways that their participants and/or consumers think, feel, and act when engaged in a sustainability campaign. To this end, sport managers

and marketers should have a strong understanding of their participants' attitudes towards sustainability, whether positive or negative, to begin to shape specific messaging to encourage participation by identifying their needs and values (Trail, 2015, 2016). Understanding the needs and values of sport participants can help marketers and managers determine how those needs and values affect positive attitudes towards the campaign. Then, in turn, sport managers can also leverage sport participants' point of attachments with the organization, city, community, and so on, to further increase positive attitudes towards the sustainability campaign (McCullough & Kellison, 2016). Increasing the positive attitudes towards the campaign, while minimizing the negative influence of external constraints to act sustainably, can increase sustainable behavioral intentions and thus increase the success of the sport organization's sustainability campaign (McCullough & Cunningham, 2011). Lastly, the model can be used to evaluate the effectiveness of sustainability campaigns to influence attitudes and behavioral intentions of sport participants.

### **Limitations**

Despite the innovative nature and findings of this study, there are several limitations. First, there are additional factors that prior research has suggested that could be included in the model (see Trail, 2015, 2016). However, our primary objective was to test the fit of the SSCEM and not to maximize the variance explained by specific factors. Second, we did not include a variety of sustainability behaviors in the past behaviors or future intention subscales because The Run was only interested in carbon offsets and recycling. In addition, because we included both of these behavioral intentions in the same second order factor, it could have limited the variance explained between past behaviors and future intentions. Further, the current model is specifically focused on these behaviors and not on other sustainability behaviors (e.g. energy consumption). Finally, we also only received responses from approximately 3% of the total number of participants in The Run. Although we are confident this sample is representative of the population of Run participants, generalizing to other participatory events or spectator sport events should be done with caution.

### **Recommendations**

Future research should replicate and extend this study in other contexts (e.g. other sport participation events, leisure events, sport spectating). Further, researchers need to look at additional aspects of the model to better explain the predictors of sustainable attitudes. Specifically, additional research should be done to expand the model within the context of examining people's thoughts, feelings, and intentions concerning environmental sustainability campaigns and the overall effectiveness of the campaign. Furthermore, the model and future research need to include behaviors to address the knowledge-action gap. To this end, sport managers can craft specific messages to various market segments to encourage positive attitudes and sustainable behaviors. To examine this, future research should examine how such segments could be created and what messages should be crafted for each segment respectively. Further, researchers should explore the responses (actual behavioral responses) to event and organizational sustainability campaigns so that sport organizations can better connect, promote, and reinforce sustainable behaviors among fans. Currently there are no known ways in which sport organizations currently evaluate

their sustainability campaigns. Without this examination and without understanding the effectiveness of their sustainability campaigns, sport organizations may implement environmental sustainability initiatives and consequentially withdraw from their commitment or eliminate initiatives because they are seen as ineffective in reaching their consumers (see McCullough et al., 2016).

### Summary

In summation, the sport industry is deepening its commitment to the natural environment by initiating various sustainability campaigns. However, as sport organizations move to implement these campaigns there is not a standardized way to evaluate these efforts and the response of participants and fans. The SSCEM is a more comprehensive and theoretically based option to evaluate environmental sustainability initiatives within the sport industry and the response of sport participants. The findings from this study indicate that needs and values significantly and meaningfully predict attitudes towards the campaign more so than previous sport-oriented studies examining the predictors of attitudes toward sustainability. Likewise, attitudes towards the campaign, external constraints, and past sustainable behaviors significantly predict behavioral intentions to engage in the sustainability initiatives, which were a focus in the environmental campaign of The Run. These findings suggest that the model fit the data well and should be explored in other contexts to show the versatility and breadth of the sport sustainability campaign evaluation model. As sport organizations deepen their commitments to environmental sustainability by increasing the sophistication of their initiatives to include deeper fan engagement, the tested model can further add to the sophistication of this effort within the industry. Sport managers can use the model to determine how to craft messages when engaging their fans when developing environmental sustainability.

### Disclosure statement

No potential conflict of interest was reported by the authors.

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