

Inter- and intra-team differences in professional sport fans' environmental attitudes

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Abstract

Purpose – Sport has emerged as a powerful platform for promoting environmental awareness and action. Major collegiate and professional teams have implemented sustainability strategies, although some have hesitated to promote them out of concern for political polarization and fan alienation. This study aimed to examine differences in environmental attitudes among fans of two professional sport organizations competing in the same venue but in different sports.

Design/methodology/approach – Survey data were collected from 2,652 season ticket holders of the two organizations. The survey included measures of environmental awareness, perceived behavioral control, ascriptions of responsibility, awareness of team initiatives and green team fandom. Participants' environmental status (active, passive or non-environmentalist) was also assessed. Analysis of variance was used to examine differences in environmental attitudes based on sport affiliation and environmental status.

Findings – Significant but small differences in environmental awareness and awareness of team initiatives based on sport affiliation were found. However, environmental status had a significant effect on environmental awareness, perceived behavioral control, ascriptions of responsibility and green team fandom, with active environmentalists scoring highest, followed by passive environmentalists and non-environmentalists. Surprisingly, fans' environmental status did not significantly impact their awareness of team sustainability initiatives. Non-environmentalists, a substantial portion of the sample, did not express particularly negative attitudes toward sustainability.

Originality/value – This study extends previous research by examining fan attitudes toward environmental sustainability. It challenges the assumption that promoting sustainability initiatives may alienate fans, particularly non-environmentalists, and highlights the potential for sport organizations to leverage their unifying power to promote environmental action among diverse fanbases.

Keywords Sport ecology, Sustainability, Environmental attitudes, Consumer behavior, Sport marketing, Corporate social responsibility

Paper type Research paper

Sport has long been understood as a unique and effective vehicle for raising awareness of environmental issues and promoting climate action (Inoue and Kent, 2012; Kellison and McCullough, 2018). For example, in recognition of sport's widespread appeal and global

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reach, in 2018, the United Nations launched its Sports for Climate Action framework, in part to use “sport as a unifying tool to drive climate awareness and action among global citizens” ([United Nations Framework Convention on Climate Change, 2018](#), p. 4). The framework contains more than 250 signatories, including the Fédération Internationale de Football Association and the International Olympic Committee. Two years earlier, the White House inaugurated Green Sports Day in the United States to recognize the “significant steps [taken by sports teams, athletes, and their fans] to reduce their carbon footprint and educate people about sustainable solutions” ([Obama, 2016](#), para. 2).

At the highest levels of sport, major collegiate and professional teams have also implemented sustainability strategies to improve their environmental performance. Such strategies include designing stadiums to meet green building certification standards ([Kellison and Hong, 2015](#)), implementing zero-waste operations for their events ([Kann, 2023](#)) and expanding their front offices to include professionals with the requisite expertise to manage venues and events responsibly ([McCullough et al., 2018](#)). While some teams have elected not to publicly promote their pro-environmental strategies for fear of alienating the subset of skeptics among their fanbases ([Casper et al., 2021](#); [Kellison and Cianfrone, 2020](#)), others have directly engaged in communication campaigns aimed to educate and motivate their fans ([Trail and McCullough, 2020](#)).

Research on sport consumers’ environmental attitudes has focused on their baseline knowledge of environmental issues, support of teams’ pro-environmental strategies and behavioral outcomes (e.g. environmental, consumer; [McCullough and Trail, 2023](#)). As more sport organizations promote environmental sustainability initiatives, they may design targeted strategies to reach and engage consumers and encourage pro-environmental behaviors more extensively ([Kellison and McCullough, 2018](#)). The successful deployment of a sustainability campaign by one sport organization may promote institutionalized practices in which other organizations adopt a similar strategy (i.e. mimetic institutionalization; [Todaro et al., 2023](#)). While this imitation may be more common among sport organizations within the same geographic market, researchers have demonstrated that fan culture can vary even among organizations whose consumers (i.e. fanbase) share seemingly similar characteristics ([McGehee et al., 2019](#)). In that case, a standardized, “one-size-fits-all” approach to promoting environmental sustainability may not be effective ([Trail and McCullough, 2018](#)).

A recurring suggestion in studies of fan engagement and sustainability is to expand empirical work to other contexts and settings (e.g. [Daddi et al., 2021](#); [Greenhalgh and Drayer, 2020](#)). We respond to that recommendation in this study, where we analyze fans of two major-league organizations that compete in the same stadium but in different sports. Specifically, we examine differences in fans’ attitudes toward the environment, awareness of their respective team’s sustainability initiatives and support of those initiatives based on their affiliation and environmental status. This context (i.e. teams competing in the same venue but in different sports) provides a natural laboratory to investigate whether sport fans are different in their attitudes toward environmental sustainability. Despite being exposed to similar sustainability programs and messages during their respective teams’ events, fans of different sports may still exhibit distinct attitudes and awareness levels. By comparing these two fanbases, we consider whether sport-specific identities influence environmental perspectives. This approach enables us to test the assumption that all sport fans will respond similarly to sustainability messaging and to clarify the demand for more nuanced, sport-specific sustainability communication strategies.

Literature review

Theoretical foundations

The issue of environmental sustainability continues to attract significant attention in the sport industry and academy ([McCullough et al., 2020a](#)). Sport organizations and events have recognized the importance of adopting environmentally responsible practices to reduce their ecological footprint and promote sustainable development. At the same time, researchers have

approached sport sustainability from myriad directions, including stakeholder perceptions, drivers and outcomes of environmental practices, fan engagement and behavioral change. [Daddi et al. \(2024\)](#) examined the role of stakeholders (i.e. fans, players and staff) in leveraging the adoption of green strategies in grassroots football clubs across Europe. Their findings suggest that stakeholders' environmental sensitiveness and knowledge positively shape the pressures for adopting green practices. Interestingly, however, environmental sensitivity and expectations were lower among fans than among players and staff. [Todaro et al. \(2023\)](#) similarly investigated the drivers and expected outcomes of adopting environmental practices by professional football organizations. Their results highlight the influence of pressures from market and community stakeholders as relevant influencers for adopting both operational and governance-centered environmental practices. Additionally, pressures from football institutions were more persuasive in adopting governance rather than operational practices.

A growing line of research has explored fan engagement and perceptions of sustainability initiatives implemented by sport organizations. In one example, [Cayolla et al. \(2023\)](#) examined fans' perceptions of pro-environmental sustainability initiatives promoted by a professional football club and their effects on the organization's triple bottom line (i.e. environmental, social and financial performance). Their findings indicate that fans' positive perceptions of pro-environmental sustainability initiatives in sport have a positive impact on their social behaviors, daily environmental actions and economic activities toward the club. Despite the potential for positive outcomes, past studies have found that sport organizations may not be fully realizing this potential. For instance, in their study of professional teams playing in eco-friendly venues, [Kellison and Kim \(2014\)](#) found that organizations were "falling short of their goal of increasing awareness among nonfans, especially after their facilities have opened, as demonstrated most significantly by their failure to commercially market to nonfans" (p. 46). This lack of a coherent marketing strategy, they argued, was leading teams to miss out "on both the potential to attract new consumers who are interested in sustainability and the opportunity to be a public voice in favor of ecological mindfulness" (p. 46). In a more recent example, [McCullough et al. \(2020b\)](#) analyzed the environmental performance signaling communications of North American sport organizations and found that these communications primarily focused on fan engagement initiatives (awareness and participation) but lacked goal setting, measurement metrics or performance summaries.

Those organizations endeavoring to expand their environmental programming may face several barriers. For instance, [Kellison and Cianfrone \(2020\)](#) discussed the polarization and politicization that come with discussions of climate change and environmental protection, emphasizing the need for sport organizations to navigate these complex challenges carefully. [Casper et al. \(2021\)](#) examined how sport fans' sustainability-specific values, perceptions and norms related to awareness, engagement and influence of collegiate sport sustainability efforts based on political affiliation. Their findings suggest that while political affiliation influenced pro-environmental values and norms, sustainability program engagement and the influence of initiatives on behavior were politically neutral. Additionally, ascription of responsibility was found to be a significant predictor of sustainability-related engagement and behaviors for both Independents and Republicans.

Consistent with previous studies on fan engagement and sport sustainability, this study is grounded in social identity theory (e.g. [Casper et al., 2021](#); [Inoue and Kent, 2012](#)). Social identity theory examines how individuals derive part of their self-concept from the social groups to which they belong ([Fink et al., 2009](#)). In this study, fans' environmental identities may interact with their identities as fans of a particular team or sport to shape their attitudes toward an organization's sustainability efforts. Social identity theory posits that individuals derive social meaning and purpose through the characteristics and values of the collective group ([Tajfel, 1978](#)). Within this study, fans have dual identities that may be salient when processing environmental messaging and initiatives as their environmentalist or non-environmentalist identity converges with their loyalty to the respective team and group identity. This dual identity can influence how they perceive the team's environmental efforts

and engage with those initiatives. [Delia et al. \(2024\)](#), for example, found that environmental identification can lead to deepened affiliation with a team that supports environmental initiatives. Conversely, fans with existing identity with a team can deepen their environmental identification because of the team's environmental efforts. The challenge remains how might sport organizations respond to fan expectations for their team to engage in environmental initiatives ([McCullough and Trail, 2023](#)).

Statement of the problem

In light of the differences that exist with a team's fanbase, researchers have emphasized the need for tailored and targeted communication strategies to effectively reach and engage diverse fan demographics ([Trail and McCullough, 2018](#)). That is, a "one-size-fits-all" approach may not effectively resonate with all fans, and teams must consider their fanbases' unique characteristics, values and preferences when crafting environmental messaging and campaigns. Using their Sport Sustainability Campaign Evaluation Model, [Trail and McCullough \(2020, 2021\)](#) and [McCullough and Trail \(2023\)](#) demonstrated how a robust messaging campaign could promote sustainable behaviors at events and extend sustainability and advocacy behaviors into local communities. Such a campaign would require various communication strategies, including in-venue displays, digital campaigns, partnerships and targeted initiatives. While these efforts have shown promise, challenges and considerations related to political polarization, tailored messaging and impact evaluation remain.

Nevertheless, developing tailored marketing campaigns to promote pro-environmental initiatives can be challenging for professional sport teams due to the limited channels through which they can reach fans. While professional sport teams indeed have a wide reach and multiple channels for communication, their ability to customize messaging during live events is limited. In-game promotions and sustainability initiatives related to the stadium and event operations typically rely on broad, "one-size-fits-all" messaging via signage, public address messages, video board content and other in-venue activations that must appeal to all attendees simultaneously. This constraint is particularly relevant when promoting venue-specific sustainability efforts. Teams have more flexibility to target specific groups (such as environmentalists) in external campaigns, but the immediate, experiential nature of sustainability initiatives during an event (e.g. recycling programs, energy-saving measures) necessitates more generalized communication strategies. Given the limitation of many sport organizations to develop robust and tailored sustainability campaigns, in this study, we consider the need to identify sociodemographic distinctions among and between fanbases as a critical first step in developing effective marketing strategies to promote positive environmental action. This study is guided by two research questions (RQs):

- RQ1. To what extent do environmental perspectives differ between fans of two distinct sports?
- RQ2. How do fans of different environmentalist orientations vary in their awareness of and engagement in their team's sustainability initiatives?

Method

Following Institutional Review Board approval, surveys were distributed to season ticketholders of two North American professional sport organizations. The teams' home city and competition venue were the same, but they competed in different sports. The shared nature of the venue suggests that fans of both teams were exposed to similar environmental initiatives during games. These included well-marked resource recovery stations for recycling and composting throughout the stadium. Additionally, both teams incorporated some in-game messaging that highlighted corporate partners supporting the venue's sustainability plan. The venue's sustainable design features were also promoted via signage and static video board messages.

Given participants' status as season ticket holders, we assumed with confidence that the sample was largely made up of fans that strongly identified with their respective teams, as purchasing season tickets requires a significant of income and time; this assumption is summarily tested below. Both season ticketholder distribution lists were owned by their respective teams, and all survey invitations and subsequent communications originated from the organizations (rather than the study's authors). Surveys were reviewed for completeness and missing data, and 2,652 ($n_A = 1,656$; $n_B = 996$) responses were retained. There were no instances of multiple surveys completed by the same account holder (e.g. individuals or families holding season tickets with both teams).

In consultation with the sport organizations of interest, a survey was developed using a combination of original items and previously used constructs. First, Environmental Awareness comprised two items from Blok *et al.* (2015) and measured participants' general perceptions about environmental issues (e.g. "I worry about environmental issues"). Second, Perceived Behavioral Control, or self-efficacy in safeguarding the environment, included three items from Mancha and Yoder (2015) (e.g. "I am confident I can protect the environment"). Third, using two items adapted from Casper *et al.* (2014), we measured participants' Ascriptions of Responsibility, or belief that the sport organization had a responsibility to engage in environmentally responsible initiatives (e.g. "I think it's important for the [team] to consider ways of reducing their environmental impact"). Fourth, six original items were used to measure fans' Awareness of Team Initiatives, which ranged from a venue-wide recycling program to the plan to generate energy from an on-site solar array. Fifth, two items were developed to measure Green Team Fandom, the extent to which a team's engagement in pro-environmental behaviors elicited positive feelings like pride (e.g. "The [team's] sustainability efforts make me a bigger fan of the team").

The five outcome variables selected for study were of mutual interest to both the researchers and the partnering sport organizations, and they can be categorized into three broad areas. First, Environmental Awareness and Perceived Behavioral Control reflect general environmental attitudes, providing insight into fans' overall stance on environmental issues. Second, team-specific environmental perceptions were assessed via Ascriptions of Responsibility and Awareness of Team Initiatives and relate to how a fan views their team's role in and actions toward sustainability. Finally, Green Team Fandom is intended to bridge fans' connections with their team and their environmental attitudes. Collectively, these variables represent key aspects of fans' environmental perspectives and engagement with team sustainability efforts, aligning with our RQs and grounding in social identity theory.

Awareness of Team Initiatives was measured using the following six response choices: *never heard of*; *heard before, but not at all familiar*; *not very familiar*; *neither familiar nor unfamiliar*; *somewhat familiar* and *very familiar*. All other observed variables were measured by a seven-item response choice anchored by *strongly disagree* and *strongly agree*. Mean scores were calculated for each construct (Sullivan and Artino, 2013). Participants' Environmental Status was determined from a single item—"Do you consider yourself an environmentalist?"—with the options "Yes, ACTIVE environmentalist," "Yes, PASSIVE environmentalist," "No, not an environmentalist," and "I do not want to answer this question."

Several steps were taken to limit the effect of common method variance (Podsakoff *et al.*, 2024). First, we endeavored to reduce the social desirability of response choices. In the survey invitation, the need for a spectrum of environmental attitudes was emphasized: "Are you *passionate about environmental sustainability*? Or do you think environmental sustainability is a *totally over-hyped waste of time/money*? Either way, we want to get your feedback—we need people who fit into both groups!" (emphasis in original). Additionally, we used positive-negative item balance across two constructs that could be considered politically charged: for Perceived Behavioral Control, two of three items were negatively worded, and for Ascriptions of Responsibility, one of two items was negatively worded. Other remedies included using different scale anchors and anchor points, separating the predictor and criterion variables on the survey and protecting respondent anonymity.

Results

Overall, testing of the survey items and composite variables produced evidence of the scale’s acceptable psychometric properties. To assess internal consistency, we reviewed Cronbach’s alpha coefficients and average item-to-total (ITT) correlations for each of the five constructs. For Environmental Awareness, $\alpha = 0.59$ and ITT correlations ranged from 0.35 to 0.43; for Perceived Behavioral Control, $\alpha = 0.73$ and the ITT correlation was 0.58; for Ascriptions of Responsibility, $\alpha = 0.59$ and the ITT correlation was 0.46; for Awareness of Team Initiatives, $\alpha = 0.84$ and ITT correlations ranged from 0.41 to 0.71 and for Green Team Fandom, $\alpha = 0.66$ and the ITT correlation was 0.51. We acknowledge that Environmental Awareness and Ascriptions of Responsibility both had low alpha coefficients. While this result would normally be cause for concern, we note that each construct had a reduced number of items (i.e. 2–3; [Tavakol and Dennick, 2011](#)), and that peer-reviewed studies previously employing these subscales had provided evidence of reliability and validity. Additionally, we calculated correlations among the constructs (see [Table 1](#)). The absence of correlations between 0.75 and 0.95 (which would suggest the presence of multicollinearity) serves as evidence of discriminant validity ([Grewal et al., 2004](#)). Lastly, to test for the threat of common method bias, we employed Harman’s single-factor test; the 15-item factor accounted for 27% of the variance, suggesting common method bias was not a threat (as the single factor failed to explain at least 50% of the variance; [Fuller et al., 2016](#)).

Across the entire sample, participants were mostly men (70.1%). The median age range was 45–54, the median education level obtained was a bachelor’s degree and the median annual household income was between \$150,000 and \$199,999. Just over 10% of respondents indicated they were so-called “active environmentalists,” while 48% were “passive environmentalists,” and nearly 39% were not environmentalists (3% declined to respond). More than 96% of the sample responded affirmatively to the item, “I consider myself a ‘real’ fan of [the team],” indicating that respondents had relatively strong connections with their respective teams. Between the two subsamples of fans, Sport A was older (*Mdn* 45–54 vs. 35–44) and comprised more women (38.3% vs. 16.0%). In both cases, compared to data provided by organizations on their overall fanbases, the subsamples of respondents were less diverse, older and had higher levels of education and income. A complete profile of the sample is provided in [Table 2](#).

In the context of [RQ1](#), the relative sameness of the two professional sport teams’ sustainability initiatives afforded an opportunity to test whether their distinct fanbases differed in environmental awareness, feelings toward the in-venue sustainability initiatives and positive feelings toward the respective teams. Using analysis of variance (ANOVA), we found a significant effect of Sport on fans’ Environmental Awareness and Awareness of Team Initiatives (see [Table 3](#)). For Environmental Awareness, $F(1, 2,650) = 91.68, p < 0.001, \eta^2 = 0.03$, fans of Sport B ($M = 5.68, SD = 1.37$) scored higher than those of Sport A ($M = 5.14, SD = 1.40$). For Awareness of Team Initiatives, $F(1, 2,650) = 59.13, p < 0.001, \eta^2 = 0.02$, fans of Sport A ($M = 3.49, SD = 1.33$) reported higher awareness than fans of Sport B ($M = 3.08, SD = 1.32$). Despite this statistical significance, the effect sizes ranged from

Table 1. Correlations among constructs

Construct	1	2	3	4	5
1. Environmental awareness	1				
2. Perceived behavioral control	0.50	1			
3. Ascriptions of responsibility	0.55	0.38	1		
4. Awareness of team initiatives	0.00	0.10	0.06	1	
5. Green team fandom	0.50	0.34	0.57	0.21	1

Source(s): Table created by authors

Table 2. Sociodemographic characteristics of sample

	Sport A (n = 1,656)		Sport B (n = 996)		Combined (N = 2,652)	
	Frequency	%	Frequency	%	Frequency	%
<i>Age</i>						
18–24	8	0.5%	41	4.1%	49	1.8%
25–34	158	9.5%	357	35.8%	515	19.4%
35–44	411	24.8%	308	30.9%	719	27.1%
45–54	525	31.7%	214	21.5%	739	27.9%
55–64	390	23.6%	60	6.0%	450	17.0%
65+	164	9.9%	16	1.6%	180	6.8%
<i>Gender identification</i>						
Man	1,022	61.7%	837	84.0%	1,859	70.1%
Woman	634	38.3%	159	16.0%	793	29.9%
<i>Education</i>						
High school or less	78	4.7%	20	2.0%	98	3.7%
Some college, no degree	248	15.0%	23	2.3%	271	10.2%
Associate's degree	171	10.3%	166	16.7%	337	12.7%
Bachelor's degree	655	39.6%	483	48.5%	1,138	42.9%
Graduate degree	504	30.4%	304	30.5%	808	30.5%
<i>Income</i>						
Less than \$40,000	78	4.7%	20	2.0%	98	3.7%
\$40,000–\$69,999	248	15.0%	23	2.3%	271	10.2%
\$70,000–\$99,999	171	10.3%	166	16.8%	337	12.7%
\$100,000–\$149,999	655	39.6%	473	48.0%	1,138	42.9%
\$150,000–\$199,999	504	30.4%	304	30.8%	808	30.5%
\$200,000–\$249,999	78	4.7%	20	2.0%	98	3.7%
\$250,000 or more	248	15.0%	23	2.3%	271	10.2%
No answer	171	10.3%	166	16.8%	337	12.7%
<i>“Real” fan</i>						
Strongly agree	1,237	74.7%	781	78.4%	2,018	76.1%
Agree	280	16.9%	153	15.4%	433	16.3%
Somewhat agree	64	3.9%	17	1.7%	81	3.1%
Neither agree nor disagree	15	0.9%	2	0.2%	17	0.6%
Somewhat disagree	4	0.2%	2	0.2%	6	0.2%
Disagree	1	0.1%	0	0.0%	1	0.0%
Strongly disagree	55	3.3%	41	4.1%	96	3.6%
<i>Environmentalism</i>						
Yes, active	132	8.0%	139	14.0%	271	10.2%
Yes, passive	730	44.1%	543	54.5%	1,273	48.0%
No	735	44.4%	293	29.4%	1,028	38.8%
No answer	59	3.6%	21	2.1%	80	3.0%

Note(s): “Real fan” measured by single item, “I consider myself a ‘real’ fan of [the team].”

Source(s): Table created by authors

negligible to small (Cohen, 2013). There were no significant differences found in Perceived Behavioral Control, Ascriptions of Responsibility or Green Team Fandom.

With respect to RQ2, the effect of fans’ Environmentalism Status was significant on Environmental Awareness, Perceived Behavioral Control, Ascriptions of Responsibility and Green Team Fandom (see Table 4). In those cases, pairwise comparisons of the means using Tukey’s HSD test ($p < 0.05$) indicated significant differences between each of the three subgroups, in which active environmentalists’ scores were highest, passive environmentalists’ scores were in the middle and non-environmentalists’ scores were lowest. Specifically, for

Table 3. Means, standard deviations and one-way ANOVAs in environmental attitudes by sport

Measure	Sport A		Sport B		F(1, 2,650)	η^2
	M	SD	M	SD		
Environmental awareness	5.14	1.40	5.68	1.37	91.68***	0.03
Perceived behavioral control	5.21	1.04	5.29	1.01	3.81	0.00
Ascriptions of responsibility	5.25	1.35	5.35	1.32	3.12	0.00
Awareness of team initiatives	3.49	1.33	3.08	1.32	59.13***	0.02
Green team fandom	5.04	1.30	5.02	1.24	0.13	0.00

Note(s): Awareness of Team Initiatives measured by six-item response choices anchored by *never heard of* and *very familiar*. All other observed variables were measured by seven-item response choices anchored by *strongly disagree* and *strongly agree*. *** $p < 0.001$

Source(s): Table created by authors

Table 4. Means, standard deviations and one-way ANOVAs in environmental attitudes by environmentalist status

Measure	Active		Passive		Not		F(2, 2,569)	η^2
	M	SD	M	SD	M	SD		
Environmental awareness	6.44 _a	0.90	5.83 _b	1.07	4.49 _c	1.42	474.37***	0.27
Perceived behavioral control	6.02 _a	0.89	5.44 _b	0.91	4.80 _c	1.01	232.57***	0.15
Ascriptions of responsibility	6.19 _a	0.96	5.59 _b	1.13	4.71 _c	1.41	223.47***	0.15
Awareness of team initiatives	3.35	1.48	3.38	1.34	3.26	1.30	2.36	0.00
Green team fandom	5.85 _a	1.06	5.31 _b	1.08	4.50 _c	1.28	211.75***	0.14

Note(s): Awareness of Team Initiatives measured by six-item response choices anchored by *never heard of* and *very familiar*. All other observed variables were measured by seven-item response choices anchored by *strongly disagree* and *strongly agree*. Means with different subscripts differ at the $p < 0.05$ level by Tukey's HSD test. *** $p < 0.001$

Source(s): Table created by authors

Environmental Awareness, $F(2, 2,569) = 474.37$, $p < 0.001$, $\eta^2 = 0.27$, distinct subgroups were active environmentalists ($M = 6.44$, $SD = 0.90$), passive environmentalists ($M = 5.83$, $SD = 1.07$) and non-environmentalists ($M = 4.49$, $SD = 1.42$). For Perceived Behavioral Control, $F(2, 2,569) = 232.57$, $p < 0.001$, $\eta^2 = 0.15$, distinct subgroups were active environmentalists ($M = 6.02$, $SD = 0.89$), passive environmentalists ($M = 5.44$, $SD = 0.91$) and non-environmentalists ($M = 4.80$, $SD = 1.01$). For ascriptions of Responsibility, $F(2, 2,569) = 223.47$, $p < 0.001$, $\eta^2 = 0.15$, distinct subgroups were active environmentalists ($M = 6.19$, $SD = 0.96$), passive environmentalists ($M = 5.59$, $SD = 1.13$) and non-environmentalists ($M = 4.71$, $SD = 1.41$). Finally, for Green Team Fandom, $F(2, 2,569) = 211.75$, $p < 0.001$, $\eta^2 = 0.14$, distinct subgroups were active environmentalists ($M = 5.85$, $SD = 1.06$), passive environmentalists ($M = 5.31$, $SD = 1.08$) and non-environmentalists ($M = 4.50$, $SD = 1.28$). Unlike with Sport, the effect sizes of Environmentalist Status in these four cases were large. Notably, mean scores for active environmentalists, passive environmentalists and non-environmentalists exceeded the midpoint in each of these measures. The lone exception was Awareness of Team Initiatives: no significant differences were found between the subgroups, nor did the mean scores of any subgroup exceed the midpoint.

Discussion

While sport has been characterized as a great unifier (International Olympic Committee, 2021) with the “power to change the world” (Mandela, 2000, para. 2), in this study, we were

nevertheless interested in exploring the differences within sport consumers. After all, before developing targeted strategies to reach and engage environment-conscious consumers, sport organizations must have a firm understanding of their fanbases' values, preferences and behaviors (McCullough *et al.*, 2023). Indeed, the results of this study demonstrated that noticeable differences existed in fan attitudes based on the sport. However, given the low effect sizes, these differences may be attributed to other factors.

A more compelling finding relates to in-group differences. It comes as little surprise that environmentalists expressed the highest levels of Environmental Awareness, Perceived Behavioral Control, Ascriptions of Responsibility and Green Team Fandom. While it may be expected that environmentalists would be more sensitive to a team's sustainability-related initiatives, we found that whether an individual is considered an environmentalist had no discernible influence on their awareness. This unexpected result challenges conventional assumptions and suggests a need for further investigation. Furthermore, all three groups' Awareness of Team Initiatives hovered slightly above 3, which corresponded to the response choice *not very familiar*, suggesting that neither team had an especially prominent (or effective) communication strategy.

The significant differences based on environmentalist status align with social identity theory (Tajfel, 1978), which posits that group identities shape attitudes and behaviors. Our data demonstrated the higher scores of active environmentalists on environmental awareness and green team fandom illustrate how an environmental identity can boost support for team sustainability initiatives. These findings suggest the need to explore how values and converging identities can be leveraged to enhance the success of a team's sustainability campaigns. Fan subcultures, or different market segmentations within a fanbase, will differ in values and characteristics concerning social or environmental issues and must be considered when creating successful campaign messaging.

Our results reinforce the need for understanding fan engagement with sustainability initiatives. The significant differences found based on fans' environmentalist status underscore the importance of considering diverse stakeholder groups within a team's fanbase, and the segmentation of the fanbase into different environmentalist groups highlights the need to address diverse stakeholder interests (i.e. environmentalist vs non-environmentalist). The lack of significant differences in awareness of team initiatives across environmentalist status groups suggests that sport organizations must improve their strategies to communicate sustainability efforts to all fans effectively. Thus, our results support Daddi *et al.*'s (2024) findings on the role of stakeholders in leveraging sustainability strategies in sport. However, our study extends this understanding by demonstrating that these distinctions exist not just between broad stakeholder categories (e.g. fans, players, staff) but also within the fan category itself. The lack of significant difference in Awareness of Team Initiatives across environmentalist status groups is particularly noteworthy, as it suggests that teams may be missing opportunities to effectively communicate their sustainability efforts to those most likely to be receptive (i.e. active environmentalists). This disconnect indicates a potential misalignment between messaging and specific segmentations that would resonate with the message. Sport organizations might benefit from more targeted communication strategies that acknowledge and cater to the different segments within their fanbase.

Notwithstanding, our findings have important implications for social identity theory (Tajfel, 1978). Social identity theory is supported by the evidence that fans' environmental identities significantly influence their environmental attitudes and behaviors. This dual identity framework suggests that sport organizations can leverage fans' identification with environmentalist groups to promote sustainability initiatives effectively. Future research should explore these dynamics in different geographical and cultural contexts to validate and extend these theoretical implications.

The finding that Awareness of Team Initiatives was relatively low across all groups, regardless of environmentalist status, highlights a critical area for improvement. As has been advocated elsewhere (e.g. Kellison and Kim, 2014; McCullough *et al.*, 2020b), sport

organizations need to develop more effective communication strategies to increase awareness of their sustainability efforts. Such strategies could involve more prominent in-stadium messaging, increased social media content focused on sustainability or partnerships with environmental organizations to amplify their message. Organizations may also consider how their messaging may attract the attention of different environmentalist segments within their fanbases. For active environmentalists, communications could focus on the specifics of initiatives and opportunities for direct involvement. For passive environmentalists, messaging might emphasize the ease and impact of participating in sustainability efforts. For non-environmentalists, organizations could focus on how sustainability initiatives enhance the overall fan experience or contribute to on-field performance (e.g. through reinvesting cost savings attributed to a venue's sustainable design).

The results also relate to social identity theory, particularly in how fans' environmental identities are situated within their team affiliations (see [Delia et al., 2024](#)). The small but significant differences found between fans of the two teams in Environmental Awareness and Awareness of Team Initiatives suggest that team affiliation may play a role in shaping environmental attitudes. Such differences warrant further exploration if such differences exist across other teams in the same region (e.g. facility, city) and whether universal environmental campaigns across fanbases can work or should be designed for the individual team ([Trail and McCullough, 2021](#)). However, this finding is consistent with [Inoue and Kent's \(2012\)](#) work on how team identification can influence pro-environmental behavior. However, the stronger effect of environmentalist status on these variables indicates that environmental identity may be more salient than team affiliation when it comes to sustainability attitudes. This possibility presents both a challenge and an opportunity for sport teams. On one hand, it suggests that teams may have limited influence in shaping fans' environmental attitudes. On the other hand, it indicates that teams have the potential to appeal to and engage fans across the environmental spectrum, as even non-environmentalists showed relatively positive attitudes toward sustainability initiatives. [Delia et al. \(2024\)](#) demonstrated how fans' environmental attitudes can be influenced by a team's environmental sustainability commitments and efforts over time. While sport organizations engage with environmental sustainability, additional social identities are important to consider and can set expectations of fans for how the team should engage—or not—with environmental sustainability initiatives.

Some sport organizations have hesitated to promote pro-environmental programming due to concerns about the potential political polarization of their fanbases ([Kellison and Cianfrone, 2023](#)). However, we found that the group most likely to be critical of such programming, non-environmentalists, did not express particularly negative attitudes toward sustainability-related issues, as expressed by their mean scores exceeding the midpoint in factors like Ascriptions of Responsibility. This outcome is significant as non-environmentalists also represented a substantial portion of the sample (i.e. 44% of Sport A and 29.4% of Sport B), so they are a group whose preferences cannot easily be ignored. Still, the findings suggest that sport organizations may have more leeway in promoting pro-environmental initiatives than previously thought, a notion supported by [Casper et al.'s \(2021\)](#) finding that sustainability program engagement was politically neutral. In light of these findings, organizations may consider developing tiered engagement opportunities that allow fans to participate at their comfort level, from simple actions like using recycling bins to more involved activities like community clean-up events. The higher levels of green team fandom among environmentalists also indicate an opportunity for teams to strengthen fan loyalty through sustainability initiatives. Organizations could consider creating "green fan" programs or sustainability-themed fan clubs to capitalize on this connection.

Additional practical implications emerged from this study. First, while they focused primarily on fan attitudes, the findings also have implications for venue management. The relatively low awareness of team initiatives suggests that current in-stadium sustainability efforts may not be sufficiently visible or impactful. Venue managers could consider more prominent signage, interactive displays or real-time tracking of sustainability metrics (e.g. waste diverted from landfills, energy saved) to increase fan awareness and engagement.

Furthermore, despite different sports represented, the similarities in attitudes between fans of the two teams suggest the possibility of cross-sport collaboration on sustainability initiatives. Teams sharing a venue, as in this study, could develop joint sustainability programs to maximize resource efficiency and broaden their reach. As discussed previously, to some extent, the teams represented in this study already share a sustainability program (e.g. on-site recycling program, stadium's use of renewable energy), and yet, awareness of these programs was relatively low among the sample. Thus, teams with existing relationships could enhance their shared sustainability programs by partnering on a local environmental restoration project involving players from both teams in volunteer efforts or by activating a co-branded sponsorship with an eco-friendly company to support and promote the teams' combined pro-environmental initiatives. This collective approach could also position sustainability as a unifying factor that transcends sport-specific rivalries.

The study has several limitations, including the researchers' lack of final editorial control over the survey design. While this limitation may have impacted the depth and specificity of the data collected, our results provide an initial step toward establishing a global understanding of sport fans' environmental perspectives. Still, we were unable to analyze the impact of demographic characteristics on environmental attitudes and awareness due to restrictions in our agreement with the partnering sport organizations. Previous research has shown that factors such as gender, socioeconomic status, education and ethnicity can influence environmental values and behaviors. Thus, subsequent work should incorporate these demographic variables to provide a more comprehensive picture of the factors influencing sport fans' environmental attitudes. Second, while the study included a large sample size, the respondents were not fully representative of the teams' overall fanbases. The sample skewed older, less diverse and had higher levels of education and income compared to the general fanbase, and thus, it may overrepresent the views of more affluent fans. Third, the study focused on two teams in a single North American city. Environmental attitudes and awareness can vary significantly by region due to local environmental issues, political climate and cultural norms.

Similarly, while the study compared fans of two different sports, it did not deeply explore how sport-specific factors might influence environmental attitudes. For example, the nature of the sport (e.g. indoor vs outdoor, summer vs winter) or its cultural associations could impact fans' perceptions of environmental issues. Future research could more explicitly compare across a wider range of sports to identify any sport-specific patterns in environmental attitudes. Finally, we acknowledge that using self-reported measures for environmental attitudes and behaviors introduces the possibility of social desirability bias, where respondents may overreport positive environmental attitudes or behaviors. Considering these limitations and building on this study's foundation, future work should expand to diverse geographical and cultural settings. Such expansion would help researchers and practitioners to understand if regional idiosyncrasies exist and identify the best ways to engage diverse populations of sport fans in climate action as outlined in the Sports for Climate Action framework. In doing so, we reemphasize the potential for sport organizations to tap into fandom to promote general awareness and drive action at sporting events and in fans' everyday lives.

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