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Front Pages

Athens Journal of Sports

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The ***Athens Journal of Sports (AJSPO)*** is an Open Access quarterly double-blind peer reviewed journal and considers papers from all areas of sports and related sciences. Many of the papers published in this journal have been presented at the various conferences sponsored by the Sport, Exercise, & Kinesiology Unit of the **Athens Institute for Education and Research (ATINER)** & the Panhellenic Association of Sports Economists and Managers (PASEM). All papers are subject to ATINER's Publication Ethical Policy and Statement.

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President's Message

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The current issue is the third of the tenth volume of the *Athens Journal of Sports,* published by the Sport, Exercise, & Kinesiology Unit of the ATINER under the aegis of the Panhellenic Association of Sports Economists and Managers (PASEM).

Gregory T. Papanikos, President, ATINER.

Athens Institute for Education and Research

A World Association of Academics and Researchers

24th Annual International Conference on Sports: Economic, Management, Marketing & Social Aspects
13-16 May 2024, Athens, Greece

The Sports Unit of ATINER organizes its **24th Annual International Conference on Sports: Economic, Management, Marketing & Social Aspects, 13-16 May 2024, Athens, Greece** sponsored by the Athens Journal of Sports. The aim of the conference is to bring together academics and researchers of all areas of sports. Please submit a proposal using the form available (https://www.atiner.gr/2024/FORM-SPO.doc).

Academic Members Responsible for the Conference

Dr. Gregory T. Papanikos | Dr. Maria Konstantaki | Dr. Chris Sakellariou | Dr. Sharon Claire Bolton | Dr. Valia Kasimati | Dr. Cleopatra Veloutsou | Dr. Christos Anagnostopoulos

Important Dates

- Abstract Submission: **10 October 2023**
- Acceptance of Abstract: 4 Weeks after Submission
- Submission of Paper: **15 April 2024**

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The Social Program Emphasizes the Educational Aspect of the Academic Meetings of Atiner.

- Greek Night Entertainment (This is the official dinner of the conference)
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Athens Institute for Education and Research

A World Association of Academics and Researchers

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The Sports Unit of ATINER will hold its **20h Annual International Conference on Sport & Exercise Science, 29-31 July & 1 August 2024, Athens, Greece** sponsored by the Athens Journal of Sports. You may participate as stream leader, presenter of one paper, chair a session or observer. Please submit an abstract (email only) to: atiner@atiner.gr, using the abstract submission form (https://www.atiner.gr/2024/FORM-FIT.doc).

Important Dates

- Abstract Submission: **26 December 2023**
- Acceptance of Abstract: 4 Weeks after Submission
- Submission of Paper: **1 July 2024**

Academic Member Responsible for the Conference

Dr. Maria Konstantaki, Academic Member, ATINER & Senior Lecturer, Buckinghamshire New University, UK.

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Breaking the Glass: The Perception of Gender Disparity from Future Sport Professionals

By Jason L. Perry[*] & Aaron Livingston[±]

The purpose of this study is to investigate gender disparities among students seeking entrance into the sports industry. With the growing trend of women facing differences in the sports industry, an exploration of the connection between professional challenges and the perception of future professions is necessary. A convenience sample of one hundred and fifty one (N=151) subjects who possessed sport related academic majors were selected to participate in the study. The subjects' ages, racial groups, classifications, and university or college of attendance varied. Two of the sites surveyed were classified as Historically Black Colleges and Universities. Subjects were asked to complete a questionnaire, which consisted of 15 question items. A modified version of the Career Pathway Survey (CPS) was used as the questionnaire for this research project. The questionnaire was distributed via email to the subjects using an anonymous Google Forms link. Descriptive statistics were used to assess if a significant relationship existed between the responses of the Career Pathway Survey and demographic variables. These variables included student major, gender, age, classification, and race.

Keywords: *Gender disparities in sports, sport management students, glass ceilings, career opportunities, career preparation*

Introduction

The male dominated industry of sports presents differences for women looking to sustain careers in various areas of sport management, media, and entertainment. In recent years the number of women hired in the industry has increased in jobs on the entry level. However, positions in leadership are far more often held by males. In recent years, women have found success in progressing from collegiate students to entry level and mid-level managers positions but often experience the glass ceiling effect when pursuing upper-level leadership positions. Previous works suggest that hiring disparities exist among men and women in sport industry jobs related to senior leadership and executive level positions. (Hindman & Walker, 2020; Lapchick, 2020; Yiamouyiannis & Osborne, 2012). This notion supports the idea that challenges remain in recruiting, retaining, and promoting women to leadership roles in the sports industry. Thus, the importance of exploring the perception of women in the sports industry is necessary to improving diversity in the field of sports.

This investigation aimed to examine the perception of challenges facing women careers in the sports industry through the views of future sport industry

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employees. To accomplish this task, the Career Pathways Survey (CPS) was modified to gauge perceptions of barriers facing women in the workplace (Smith, Crittenden, & Caputi, 2012). The CPS focuses on investigating the perception of the barriers in terms of acknowledging that opportunities for women to advance do exist rather than focusing more singularly on questioning if women can advance (Smith et al., 2012).

The original CPS instrument categorized the participant's attitudes towards challenges facing women in the workplace in four distinct categories. These categories included those with the attitude of denial, resignation, resilience, and acceptance (Smith et al., 2012). For this current study, the categories were applied to collegiate students seeking careers in the sports industry. The researchers hope to explore the role of career readiness and program inclusion as it pertains to the confidence of students transitioning into the sports industry. As well as better understand potential disparities faced by women in sport management programs. The purpose of this study is to investigate the perception of gender disparities for students seeking entrance into the sports industry. The following research questions guided the investigation of this study:

RQ1: Is there a difference between the level of assessed Career Pathway Survey Responses and student majors?
RQ 2: Is there a difference between the level of assessed Career Pathway Survey Responses and gender?
RQ 3: Is there a relationship between the level of assessed Career Pathway Survey Responses and age?

Literature Review

This literature review explores works related to this phenomenon and looks at the current status of how gender related obstacles such as the glass ceiling phenomenon are recognized in previous studies. Many studies today identify sport as a male dominated industry that possesses challenges for women who strive to make it to and maintain senior leadership positions in the field. Harris, Grappendorf, Aicher, and Veraldo (2015) argues that the underrepresentation of women in leadership positions in the sports industry is mirrored by the disproportionate amount of female population in sport management degree programs across the United States. Moreover, 40% of sport management degree programs reported a female student population of 20% or less (Floyd Jones, Brooks, & Mak, 2008 and Hyre, Chen, & Larson, 2017). With the growing trend of women facing differences in the sports industry, an exploration of the connection between professional challenges and the perception of future professions is necessary.

The Glass Ceiling in the Sports Industry

The phenomenon of the glass ceiling is commonly used to explain existing barriers that stop women and minorities groups from moving up into top leadership

positions in the professional realm (Roman, 2017 and Smith, Crittenden, and Caputi, 2012). The presence of various obstacles or barriers have been shown to hinder women in the field of sport management and can even turn them away from seeking careers in the industry. Previous research suggests that the presence of glass ceilings can directly impact career aspirations, career satisfaction, increase job dissatisfaction, and can result in women leaving the sports industry (Cunningham, 2003). This continues to be a problem in many different industries, one of these being in the realm of sports.

As participation rates for some minority groups have increased on the field, similar increases have not occurred in terms of women filling top administrative roles. With sports remaining a male dominated field in the areas of leadership and administration, research has investigated the challenges faced by women while employed in the industry. However, additional research must be done that focuses on the perception of women students prior to entering the profession. (Forsyth et al., 2019) Women can face challenges when moving up in the professional ranks. Current research suggests that women are underrepresented in leadership positions in the industry and statistically fill such jobs as Collegiate Athletic Directors, Professional Sport General Managers, and Coaches at a lower rate. Lapchick (2019) suggest that men coach more than 60% of all women collegiate sport teams.

Denial, Resignation, Resilience, & Acceptance

According to research the popularity of sport has reached monumental levels, as more athletic administration jobs exist than in previous decades (Acosta & Carpenter, 2014; Lapchick, 2019). Although strides have been made in improving the overall outlook in terms of opportunity for employment for women in sports management, the historical prevalence of the glass ceiling may still be perceived by students as a deterring factor of pursuing a career in the field. In addition, disparities are still found in leadership roles as men are employed at a higher rate and women are more likely to be hired in subordinate roles in sport management. Examples of employment trends that show disparity include only 22.3% of Collegiate Athletic Directors and women hold less than 23% of senior leadership positions respectively (Acosta & Carpenter, 2014).

Smith, Crittenden, and Caputi (2012) posit a four factor model to better understand the views of women as it pertains to the glass ceiling theory. The researchers suggest that the factors of denial, resignation, resilience, and acceptance are critical in determining women's perception of glass ceilings in the workplace.

This research study describes denial as the belief that women perceive glass ceilings do not currently exist or deem them to be a myth. Resignation describes women that quit or fail to pursue professional opportunities such as promotions due to social or organizational barriers in the workplace. Resilience is evident through responses that indicate that women are willing to move forward in their careers despite obstacles related to a glass ceiling. Acceptance is shown when women do not seek high level positions and are content on not overcoming social or organizational barriers. Women who accept glass ceilings do not want to work

in high level positions and may not want what men want in the workplace. Smith (2012) suggests that men seek power in the workplace and that some women do not want this responsibility. Acceptance can also indicate that women that exhibit this factor do not show a drive towards obtaining career development. Examples of how this perception can present itself include valuing a balanced life over a higher paying career or not seeking the need to work the longer hours that are required in a top executive position.

Sport Management Degree Programs Supporting Diversity

Floyd Jones et al. (2008) suggest that female and minority faculty members are underrepresented in sport management programs. Leaders of institutions play a major role in promoting inclusion and improving upon the lack of diversity in educational programs. Sport management degree programs must prioritize inclusion and implement strategies to incorporate all members of society. Being aware of and showing interest in differences such as gender is essential in the positive perception students possess of their respective degree programs. Literature indicates that students who favorably view their degree programs are more likely to view themselves as being ready to successfully enter careers in the sports industry (Perry, 2017). Sport management educators must develop programs that respond to gender issues and concerns in order to prepare women with the necessary skill set for the profession. Moore (2008) argues that the practice of inclusion and working through gender differences can help women maximize their potential as sport management students and as professionals in the field.

Administrators of sport management degree programs must effectively encourage all students to engage in the degree program to best prepare students for careers in the industry. This is especially true since sport management is an applied field that must be experienced by students in order to get a sense of the requirements that are needed to be successful in sport careers. Mentoring students can be used to promote inclusion within degree programs. Strategies such as promoting student engagement can help to connect students to the degree program and result in students forming a greater affinity for the industry. This is key as it can stimulate a love for the profession and motivate students to seek employment in the field. Techniques such as internship programs, encouraging campus involvement, and providing equitable supportive resources such as access to professional networks can help students successfully matriculate into the profession (Moore & Huberty, 2014). Degree program leaders and faculty members must provide guidance for students and acknowledge sociocultural factors (e.g., ethnicity, socioeconomic status, gender) that are present in institutions of higher education.

The relationship between programs and career development and personal factors such as self-identity, affect, and motivation have also been linked to determining the career path of students. An awareness of one's personal identity such as gender in the professional setting contributes to the presence of career development for all students in the field of sport management. Harrison and Lawrence (2003), Betts and Suárez (2011), and Brewer, Van Raalte, and Petitpas

(2000) argue that specific groups such as women must be supported both professionally and personally to develop in their careers. Given the dynamic professional landscape of sports today, organizations that actively support all employees can benefit from inclusion.

Methodology

The purpose of this study was to explore the perception of gender disparities in the sports industry from students seeking entrance into the sports industry. To accomplish this purpose, demographics data from a revised version of the CPS were analyzed by using descriptive statistics. The data was analyzed using .05 level of significance. The SPSS 25 program was used to perform the statistical analysis. This methodology section will provide an overview of the methods used in this study, subjects, the survey instrument, and the procedures used in the data analysis.

Participants and Procedures

A convenience sample of one hundred fifty-one subjects who identified themselves as current students majoring in a sports related discipline were selected to participate in the study. The subjects' ages, racial groups, classifications, and university or college of attendance varied. However, with the researchers being affiliated with institutions classified as Historically Black Colleges and Universities (HBCU) the majority (83%) of subjects identified as black or African American. Further, 67.5% of the subjects were students on the graduate level. Each subject was asked to complete a questionnaire, which consisted of 15 question items. The questionnaire was distributed via email to the subjects using an anonymous Google Forms link. The initial launch of the survey consisted of the researchers sharing the survey with students in classes that they taught in the Spring 2022 academic semester. During the Fall 2022 academic semester the survey link was shared to the public through the North American Society for Sport Management (NASSM) listserv. The sport management students surveyed represented classifications ranging from undergraduate freshman to senior, and ages varied.

Instrumentation

With the author's permission, the CPS (Smith, et al. 2012) was modified to address students majoring in sport related disciplines (e.g., sport management, human performance, sport administration, sport medicine). Additionally, researcher- designed questions were added to the survey to assist in gathering data related to the students' perceptions of gender-related sport industry disparities. Face validity was utilized to validate the questionnaire. There was a total of fifteen-question items, five of which were aimed at gathering demographic information from sport management students, including their: gender, age, racial group, classification, and major of study.

The remaining 10 questions consisted of responses to 5-point Likert scale statements (strongly agree, somewhat agree, neither agree nor disagree, somewhat

disagree, and strongly disagree), and pertained to the students' perception of the role of gender in the sport industry, discriminatory challenges that gender may incite, and barriers to success that may in the sport industry. Data was collected and analyzed using Google Forms and the SPSS 25 program.

Data Analysis

SPSS 25 (Statistical Package for the Social Sciences) program was used to analyze the data collected within the scope of the research. Frequency and percentage were used to determine the distribution of the sample. In order to determine the distribution of the scales, descriptive analysis results such as mean, standard deviation, skewness and kurtosis are included. Independent sample t-test and one-way ANOVA to test the differences between groups for the cases where the scores of the scales are normally distributed; Kruskal Wallis test was used for cases where it did not show normal distribution. Levene's test was used to determine the homogeneity of the variances of the groups. In order to determine the direction of the difference between the groups, Scheffe post hoc tests were preferred when the variance was homogeneous.

Table 1. *Descriptive Statistics of Individuals Participating in the Research*

Variables		**n**	**%**
Gender	Female	90	59.6
	Male	61	40.4
Major	Sport medicine	10	6.6
	Sport management	23	15.2
	Human performance	10	6.6
	Sports administration	90	59.6
	Others	18	11.9
Age	18 – 21	45	29.8
	22 – 26	62	41.1
	27 – 35	21	13.9
	36 and over	23	15.2
Classification	Freshman	9	6
	Sophomore	17	11.3
	Junior	13	8.6
	Senior	10	6.6
	Graduate student	102	67.5
Race	Black or African American	126	83.4
	White or Caucasian	17	11.3
	Asian/Pacific Islander	1	0.7
	Hispanic or Latino	4	2.6
	Native American or American Indian	1	0.7
	Others	2	1.3

Results

In this section, the results of the analysis methods used to test the hypotheses of the research are given. Descriptive statistics of 151 individuals participating in the study are given in the Table 1.

According to the results in Table 1, 59.6% of the participants are female, 40.4% are male. 6.6% of participants major is sports medicine, 15.2% of is sports management, 6.6% of is human performance, and 59.6% of is sports administration. 11.9% of participants have other type of majors (economics, biology, communication, etc.). 29.8% of participants are in 18 – 21, 41.1% of are in 22 – 26, 13.9% of are in 27 – 35, and, 15.2% of are aged 36 and over. 6% of participants are freshman, 11.3% of are sophomore, 6.6% of are junior, 6.6% of are senior, and, 67.5% of are graduate student. 83.4% of participants are black or African American, 11.3% of are white or Caucasian, 0.7% of are Asian/Pacific Islander, 2.6% of are Hispanic or Latino, and, 0.7% of are Native American or American Indian.

Table 2. *Normality Analysis by Variables of the Career Pathway Survey Scores*

Variable	Groups	n	$\bar{X}$	sd	Skewness		Kurtosis	
					Statistic	SE	Statistic	SE
Gender	Female	61	23.56	4.46	-0.52	0.31	0.18	0.60
	Male	90	23.46	4.64	-0.12	0.25	0.54	0.50
Major	Sport medicine	10	25.30	4.45	-0.42	0.69	-0.24	1.33
	Sport management	23	22.57	3.16	0.40	0.48	-0.76	0.93
	Human performance	10	26.90	3.90	-2.03	0.69	5.11	1.33
	Sports administration	90	23.29	4.31	-0.44	0.25	0.36	0.50
	Others	18	22.83	6.58	0.12	0.54	0.20	1.04
Age	18 – 21	45	24.64	4.31	0.23	0.35	0.20	0.69
	22 – 26	62	23.82	4.49	-0.31	0.30	-0.05	0.60
	27 – 35	21	20.38	5.22	-0.43	0.50	-0.33	0.97
	36 and over	23	23.22	3.32	0.07	0.48	-0.96	0.93

sd: standard deviation, SE: Standard Error

One of the criteria that can be used to investigate the fit for the normal distribution is the kurtosis and skewness coefficients. If the kurtosis and skewness values are between +2.0 and -2.0 (George & Mallery, 2010), it can be said that the distribution is normal. In the Table 2, descriptive analyzes of the Career Pathway Survey scores in groups according to gender, major, and age are given. Accordingly, since the skewness and kurtosis values of the scores for gender and age remained between +2 and -2, they showed a normal distribution and parametric tests were applied. Since the major scores did not show normal distribution, non-parametric tests were preferred to investigate the difference between the groups.

Table 3. *Independent Sample t-test Results of the Career Pathway Survey Scores by Gender*

Dependent Variable	Levene's Test		t	df	p
	F	p			
Career Pathway Survey Score	0.14	.71	0.13	149	.89

According to the results of the Levene's Test, which was performed to test the homogeneity of variances before the independent sample t-test in Table 3, the variances between the groups were homogeneous (p>.05). Accordingly, the results of the independent sample t-test where the variances were homogeneous were included. No statistically significant differences were found between the Career Pathway Survey responses of male and female students at the .05 level (t=0.134, df=149, p>.05). Therefore, it appears that male and female students had similar Career Pathway responses.

Table 4. *Kruskal-Wallis Results of the Career Pathway Survey Scores by Major*

Dependent Variable	H	df	p
Career Pathway Survey Score	10.78	4	.03*

*p<.05

According to Table 4, it is seen that the difference between the groups in the Career Pathway Survey scores according to the major is statistically significant (H(4)=10.78, p<.05). The Kruskal Wallis test was applied in paired groups to determine between which groups the difference was.

Table 5. *Group Comparative Kruskal-Wallis Results of the Career Pathway Survey Scores by Major*

Dependent Variable	Group 1	Group 2	H	SE	Standardized Test Statistic	p
Career Pathway Survey Score	Sports Management	Human Performance	-48.50	16.53	-2.94	.03*

*p<.05

According to the Kruskal Wallis, dual test results performed to determine the direction of the difference between the groups in Table 5, the difference between the sports management and human performance groups in the Career Pathway Survey score is statistically significant (H(1)=-48.50, p<.05). In the Career Pathway Survey score, the mean of sports management group ($\underline{X}$=22.57) is significantly lower than the mean of human performance group ($\underline{X}$=26.90).

Table 6. *Homogeneity Test Results of the Variances of the Career Pathway Survey Scores by Age*

Dependent Variable	Levene's Test (F)	df1	df2	p
Career Pathway Survey Score	0.95	3	147	0.42

In order to decide on the post hoc test, which determines the direction of the difference between groups in one-way ANOVA, it is necessary to test the homogeneity of variances first, and therefore Levene's Test was performed. Scheffe, one of the post hoc tests, was used in cases where the variances were homogeneous (p>.05) in Levene's test.

Table 7. *One-Way ANOVA Results of the Career Pathway Survey Scores by Age*

Dependent Variable		Sum of Squares	df	F	p
Career Pathway Survey Score	Between Groups	271.52	3	4.69	.00*
	Within Groups	2834.23	147		

*p<.01

According to Table 7 one-way analysis of variance results regarding the Career Pathway Survey responses of students with regard to their age. Statistically significant differences were found in the Career Pathway responses of the age of student (F=4.69, df=3/147, p=.004) at the .01 level. Due to homogeneity of variances as assessed by the Levene's test, p > .05, in further data analysis Scheffe test used as post hoc.

Table 8. *Scheffe Test Results of the Career Pathway Survey Scores by Age*

Dependent Variable	Group (i)	Group (j)	i – j	p
Career Pathway Survey Score	18 – 21	27 – 35	4.26	.01**
Career Pathway Survey Score	22 – 26	27 – 35	3.44	.03*

*p<.05, **p<.01

Considering the results, students in age 18–21 ($\underline{X}$=26.64) had significantly higher Career Pathway responses than students in age 27–35 ($\underline{X}$=20.38). Students in age 22-26 ($\underline{X}$=23.82) had significantly higher Career Pathway responses than students in age 27–35 ($\underline{X}$=20.38). No other mean differences were observed. Accordingly, it seemed that students in age 27–35 tended to have lower Career Pathway responses.

Discussion

The purpose of this study is to investigate the perception of gender disparities of women in the sports industry from students seeking entrance into the sports industry. Analysis of data from the present study represents results from a convenience sample of one hundred and fifty-one (N=151) subjects who possessed sport related academic majors data, using a modified version of the Career Pathway Survey (CPS). As reported in the results, 59.6% of the participants were female, 40.4% were male. The study employed an age range from eighteen and above with most of the participants being between the ages of 22-26. Another variable analyzed in the student was the major of participants. Results from the study yielded that the largest number of participants were sport administration students (67.5%). Race was the final variable analyzed in the study. Results indicated that 126 (83.4%) of all participants were African American. In addition, Mean scores yield normality analysis by variables of the CPS Scores between gender, major, and age.

Regarding gender, an independent sample t-test analyzed the results of the Career Pathway Survey Scores by gender. No statistically significant differences between the Career Pathway Survey responses of male and female students. Therefore, male, and female students had similar Career Pathway responses. Kruskal-Wallis results of the Career Pathway Survey Scores by major revealed a statistical difference (H (4) =10.78, $p<.05$). In the Career Pathway Survey score, the mean of the sport management group (=22.57) was significantly lower than the mean of the human performance group (=26.90). Regarding age, a one-way ANOVA revealed statistically significant differences between Career Pathway responses and of the age of student (F=4.69, df=3/147, p=.004) at the .01 level. Scheffe Test Results post hoc results that student between the ages of 27–35 tended to have lower Career Pathway responses.

Limitations and Assumptions

The most notable limitations are that the instrument was researcher-constructed, was not pilot tested, and face validity was used to validate it. Also, considering the number of sport management students enrolled in institutions of higher education throughout the world, the study sample of 151 was small. Therefore, the results cannot be generalized for a broader population. Furthermore, since the survey was distributed via email, it is plausible that many faculty members could have inadvertently overlooked the questionnaire link or that it may have been deposited into their clutter or spam inbox. While email is seemingly a convenient way to garner a large response within a short time frame, Muñoz-leiva, et al. (2010), asserts that response rates for surveys administered online have decreased dramatically.

Conclusion

The first research question states: Is there a difference between the level of assessed Career Pathway Survey Responses and student majors? A statistical significance ($H(4)=10.78$, $p<.05$) was found in the Career Pathway Survey scores among the majors of sport management and human performance. The mean of the sport management group ($\underline{X}=22.57$) is significantly lower than the mean of human performance group ($\underline{X}=26.90$). This indicates that the scores of sport management majors reported higher responses in the categories of denial and resignation. Thus supporting the idea that sport management majors believe in the presence of a glass ceiling which could lead to denial and resignation due to gender disparities. The responses of the human performance majors reported higher responses in the categories of resilience and acceptance. Indicating that human performance majors acknowledged the presence of gender disparity and sought to work though career related challenges.

The second research question states: Is there a difference between the level of assessed Career Pathway Survey Responses and gender? The results of the independent sample t-test where the variances were homogeneous were used to answer this question. The t-test indicated that no statistically significant differences were found between the Career Pathway Survey responses of male and female students at the .05 level ($t=0.134$, $df=149$, $p>.05$). Therefore, it appears that male and female students had similar responses to the Career Pathway Survey questions. Thus, leading the researchers to believe that both gender groups possessed similar perspectives of the challenges facing women that pursue careers in the sports industry.

The third research question states: Is there a relationship between the level of assessed Career Pathway Survey Responses and age? The study concluded that students between the age 18–21 ($\underline{X}=26.64$) had significantly higher Career Pathway responses when compared to students in age 27–35 ($\underline{X}=20.38$) Thus indicating that the age range of 27-35 reported a higher rate of denial of the presence of gender disparity when compared to the age range of 18-21.

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Online Esports Engagement: Motivational Antecedents and Marketing Outcomes

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Esport is becoming one of the fastest-growing sports branches and providing remarkable advertising and sponsorship opportunities for brands. This research aims to understand what motivates online esports spectators to engage in esports and the way that motivations and engagement influence their purchase intention toward advertised and sponsored products during esports events. The proposed model was tested using structural equation modeling with 436 esports spectators. The results imply that esports engagement has mainly been driven by parasocial interaction between online esports spectators and players. Various motivations were found to act upon the emersion of different esports engagement dimensions, among which a hierarchy of effects existed. Affective and behavioral esports engagement positively influenced advertising sponsorship effectiveness during esports events. Along with providing a definition of esports engagement, this research creates a theoretical linkage between uses and gratifications theory, sports consumption motivations, and esports engagement; and explores how esports engagement leads to the willingness to buy products advertised during esports events and/or products of official esports sponsors.

Keywords: *esports, motivation, sponsorship, uses and gratifications, parasocial interaction*

Introduction

Esports have become a major industry with leagues, teams, professional players, cups, awards, and millions of followers and fans. The market revenue is predicted to exceed $1.6 billion with an audience of 577 million esports spectators in 2024 (Newzoo 2021a, 2021b). The increased stress and anxiety due to the COVID-19 pandemic and limitations on outdoor activities also caused a dramatic increase in esports and online gaming industry demand. For instance, Twitch (online gaming platform) reached its highest audience engagement in the first quarter of 2021, with 6.34 billion hours being watched (Streamlabs 2021). Initiatives such as #PlayApartTogether promoted socializing through online gaming and provided a way to cope with the negative psychological impacts of the pandemic. These esports communities are expected to continue in the post-COVID-19 era and to grow (Cranmer et al. 2021). Meanwhile, brands are also increasingly drawn to the market; Mastercard, Red Bull, Mercedes-Benz, and Foot Locker have already engaged as sponsors and partners in leagues, events, or teams.

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Academic research on esports, on the other hand, is still in its infancy and needs more exploration (Ji and Hanna 2020, Scholz 2019, Qian et al. 2020). This study aims to contribute to the existing literature by understanding online esports spectator motivations to engage in online esports and how such motivations and engagement levels influence the purchase intention toward products advertised during esports events and/or products of official esports sponsors. Scholz (2019) asserted that audiences (spectators/eSports consumers) should be placed at the core of esports stakeholder relationships by suggesting that practitioners and researchers must place more emphasis on spectators and their preferences, motivations, and behavior in esports management decisions. This need is primarily because of the large size and composition of esports spectators that show huge marketing potential (Ji and Hanna 2020). Even though watching other people play games is a passive process (Xiao 2020), esports spectators can actively engage with esports and the esports community during, before, and after games (Cheung and Huang 2011). Research by Ji and Hanna (2020) showed that heavily engaged online esports spectators are more willing to watch ads, click on sponsored links during games, and buy esports merchandise than less engaged consumers are. Therefore, a better understanding of what motivates esports engagement is timely and necessary to develop the right esports experience for consumers, similar to traditional sports media, and to reap the media and marketing communication benefits afterward.

This study is significant in several ways. First, it attempts to define the concept of esports engagement and considers its motivational antecedents as well as its consequences from an esports sponsorship or advertising perspective. Thus, the findings of the study add to esports, engagement, and sports sponsorship literature. The study extends the Motivation Scale for Sports Consumption (MSSC) by Trail and James (2001) by including parasocial interaction and coolness from new media engagement literature to provide a renewed and optimal measurement of online esports spectator motivations. An initial attempt to develop an instrument for esports online viewership motivation was made by (Qian et al. 2020). However, this study differentiates from Qian et al. (2020)'s study by drawing new media gratifications and focusing on online esports engagement rather than spectatorship. The study expands the boundaries of the engagement concept, a pivotal marketing metric in the digital era (Hollebeek et al. 2014, Kumar and Pansari 2016, Verhoef et al. 2010), to the esports platform and adds to this array of research. This study also tests the hierarchy of effects model (Lavidge and Steiner 1961) - the think-feel-act sequence - on online esports engagement, tries to understand the interrelationships between the dimensions of engagement and finds support for cognitive- affective-behavioral engagement sequence in esports. Finally, it provides insight to esports marketing professionals in terms of understanding how consumer motivations may be imperative to the success of esports media management and business model development for better offerings, consistent engagement, and interest in advertised or sponsored products during games as an outcome.

Literature Review

Defining Online Esports Engagement

Engagement is defined as "a psychological state that occurs by virtue of interactive, co-creative customer experiences with a brand" (Brodie et al. 2011, p. 262). Commonly accepted definitions of engagement consider it a multidimensional concept with (1) cognitive, (2) emotional, and (3) behavioral states (Brodie et al. 2013, Hollebeek et al. 2014). The cognitive dimension refers to the consumer's level of brand-related thought processing and elaboration. The emotional dimension, on the other hand, refers to a consumer's level of positive brand-related affect. Finally, the behavioral or conative dimension refers to a consumer's level of energy, effort, and time spent on using a brand (Hollebeek et al. 2014). Although there is a considerable amount of literature on the engagement subject in various disciplines (Kumar and Pansari 2016), it is limited in the esports literature. Abbasi et al. (2017, 2019, 2020) conceptualized consumer video game engagement as "a psychological state that triggers due to two-way interactions between the consumer and videogame product, which generates a different level of consumer engagement states (cognitive, affective and behavioral)" (p. 4). Wiebe et al. (2014) also measured engagement in video game-based environments and came up with four factors—focused attention, perceived usability, aesthetics, and satisfaction—as dimensions of user engagement in video games. Similarly, Hilvert-Bruce et al. (2018) attempted to understand livestream (Twitch) viewer engagement from a socio-motivational perspective. The concept was measured by four factors—emotional connectedness, time spent watching livestreams, financial donations, and subscriptions. Ji and Hanna (2020) also measured gaming engagement in their study and defined it as participation in gaming and spectatorship. Some other work on esports and game streaming also examined spectating frequency (Hamari and Sjöblom 2017), watching and gaming intention (Macey et al. 2020), passion for esports (Choi 2019), and what relates to esports engagement. In accordance with the extant literature, this study defines esports engagement as a higher-order construct that includes cognitive, emotional, and behavioral states:

> The process of intensive connection, communication, and participation in the esports environment driven by cognitive, emotional, and behavioral states.

In line with the aim of the research, the concept is studied from the perspective of online esports spectators (viewers watching streamers' esports live gameplay and/or viewers watching broadcasts of professional esports players'/teams' competitions in institutionalized tournaments). The cognitive dimension of esports engagement refers to the consumer's level of thinking and elaboration devoted to esports. The emotional or affective dimension of esports, on the other hand, refers to a consumer's level of positive affect toward esports. Finally, based on Hollebeek et al. (2014), the behavioral or conative dimension of esports refers to the consumer's level of energy, effort, and time spent on esports spectating.

Theoretical Background and Hypotheses Development

We propose a nomological framework of esports engagement that outlines the major antecedents based on the uses and gratifications (U&G) theory and its consequences based on Hollebeek et al.'s (2014) and Brodie et al.'s (2011) works. The U&G theory is a widely used framework that helps understand why and for what purposes people use media (Katz et al. 1973). This theory was deemed appropriate since motivations can be understood as the incentives that drive people's selection and use of media and media content (Rubin 2002), in this case online esports content. The U&G theory (Katz et al. 1973, Katz et al. 1974) also served as a nomological framework for the MSSC, to understand the gratification and experiences that sports consumption affords its spectators. MSSC is a modified version of U&G that fit the sports environment, to understand sports consumer behavior. The MSSC consists of eight to ten constructs (Trail et al. 2000, Trail and James 2001, Fink et al. 2002), including empathizing and co-living with the achievements of teams and players (vicarious achievement), aesthetics of a sport, drama of a sport, watching sports as a means of escaping everyday life, knowledge acquisition related to a sport, admiring the skills of athletes, social interaction with other spectators, physical attractiveness of athletes, novelty of new players and teams, and enjoyment of aggression and aggressive behaviors that athletes exhibit. The motivational antecedents of online esports engagement were drawn from MSSC but were also stretched by including two other gratifications (parasocial interaction and coolness) pertained to new media engagement. This was so because differing from live-esports spectators, online esports spectators use livestreaming media platforms (e.g., Twitch, YouTube Live), and the gratifications related to digital media needed to be demonstrated by the measurement of additional, new media related constructs.

Motivational Antecedents of Online Esports Engagement

A study by Weiss and Schiele (2013) was one of the first to understand esports usage and found that competitive (competition, challenge) and hedonic (escapism) gratifications were both positively associated with esports use. Another study showed that esports spectators watch esports based on motivations that are similar to those of traditional sports fans (Choi 2019). Among the motivations, achievement and economics were strongly related to watching esports, while escapism explained passion for esports. In another study, the frequency of esports spectatorship was predicted by motivations such as escapism, acquiring knowledge about the games being played, novelty, and athlete aggressiveness (Hamari and Sjöblom, 2017). Similarly, Xiao (2020) found a correlation between drama, escapism, and aesthetics and watching esports. Aesthetics, drama, and escapism, along with social factors, were also positively related to attitude toward watching esports (Xiao 2020). Rogers et al.'s (2020) study on NBA 2K viewers showed that consumers have emotional (arousal, entertainment, enjoyment of passing time), cognitive (surveillance, fanship, autonomy), and behavioral (peer pressure, social interaction, relatedness) motivations. Online esports spectators were found to be motivated by

dimensions such drama, acquisition of knowledge, appreciation of skill, novelty, aesthetics, and enjoyment of aggression at higher levels compared to live esports event attendees (Sjöblom et al. 2020). Furthermore, the flow felt in games is found to be affected by motivations such as achievement, drama, and players' skills (Kim and Kim 2020). Finally, Qian et al. (2020) developed the Motivation Scale of Esports Spectatorship (MSES) and identified skill improvement and vicarious sensation as the unique motives that emerged in the esports context.

Apart from the motivations discussed in the MSSC, this study incorporates parasocial interaction and coolness motivations as other possible dimensions and extends the MSSC framework. Parasocial interaction and coolness dimensions were often considered as motivating factors in studies on new media (online) engagement. Therefore, we decided to include them and extend MSSC to better understand online esports spectators' mindset. Parasocial interaction is long-term involvement with media characters that is comparable to friendship (Rubin et al. 1985). Hartmann et al. (2008) were the first to focus on parasocial interaction with sports people (Formula 1 racers in this case) in their study on sportscasting. Years later, Wulf et al. (2020) mentioned parasocial interaction as a motivating reason to engage with (e.g., donate to, ask questions of, root for) Twitch esports streamers. As viewers form stronger bonds with esports streamers via parasocial interaction, they engage with their favorite esports players more by interacting with them, motivating them, or donating money to them. Consequently, it is expected that parasocial interaction with esports players acts as a gratification and motivates engagement with esports as well.

Another gratification discussed as motivating engagement with new online media platforms is self-promotion and gaining popularity, which is termed as "coolness" in the extant literature (Sheldon and Bryant 2016, Smock et al. 2011). Warren and Campbell define coolness as "a subjective and dynamic, socially constructed positive trait attributed to cultural objects inferred to be appropriately autonomous" (2014, p. 544). People are typically interested in being on a forum/ medium that is popular among their peers and esport is one such medium in the recent decades. Spectating esports validate their popularity and status among their peers.

Based on the above stated (a) Aesthetics, (b) escape, (c) enjoyment of aggression, (d) social interaction, (e) vicarious achievement, (f) drama, (g) physical attractiveness, (h) coolness, and (i) parasocial interaction, (j) skillful learning motivations hypotheses were formed as follows:

H1: Motivations (a-j) have a positive impact on cognitive engagement.
H2: Motivations (a-j) have a positive impact on affective engagement.
H3: Motivations (a-j) have a positive impact on behavioral engagement.

The Hierarchical Relationship and Components of Esports Engagement

It is assumed that there is hierarchical relationship between different levels of esports engagement based on the hierarchy of effects model (Lavidge and Steiner 1961), which says that there is a "think," "feel," and "do"—or cognitive, affective, and behavioral—sequence in consumer behavior. According to the model, after

exposure to a subject, a consumer first develops awareness and gains knowledge about the subject. Then, they evaluate their beliefs and form emotions toward the subject through the liking and preference phases, which results in the development of behavior (Barry and Howard 1990, Lavidge and Steiner 1961). People's attitudes are also divided into three classes: cognition, affect, and conation (or behavioral intention) (Bagozzi 1978). As such, using these general components of attitude, Oliver (1997) stated that consumers become "loyal first in a cognitive sense, then later in an affective sense, and still later in a conative manner" (p. 392). Following this lead, our conceptual model hypothesizes that there is a hierarchical link between cognitive, affective, and behavioral engagement. The definition of engagement already indicates attitudinal engagement as a driver of behavioral engagement (van Doorn et al. 2010). This linkage found support in Barari et al.'s (2020) meta-analysis of customer engagement behavior and Saks' (2006) study on employee engagement. Thus,

H4a: Cognitive engagement has a positive impact on affective engagement.
H4b: Affective engagement has a positive impact on behavioral engagement.

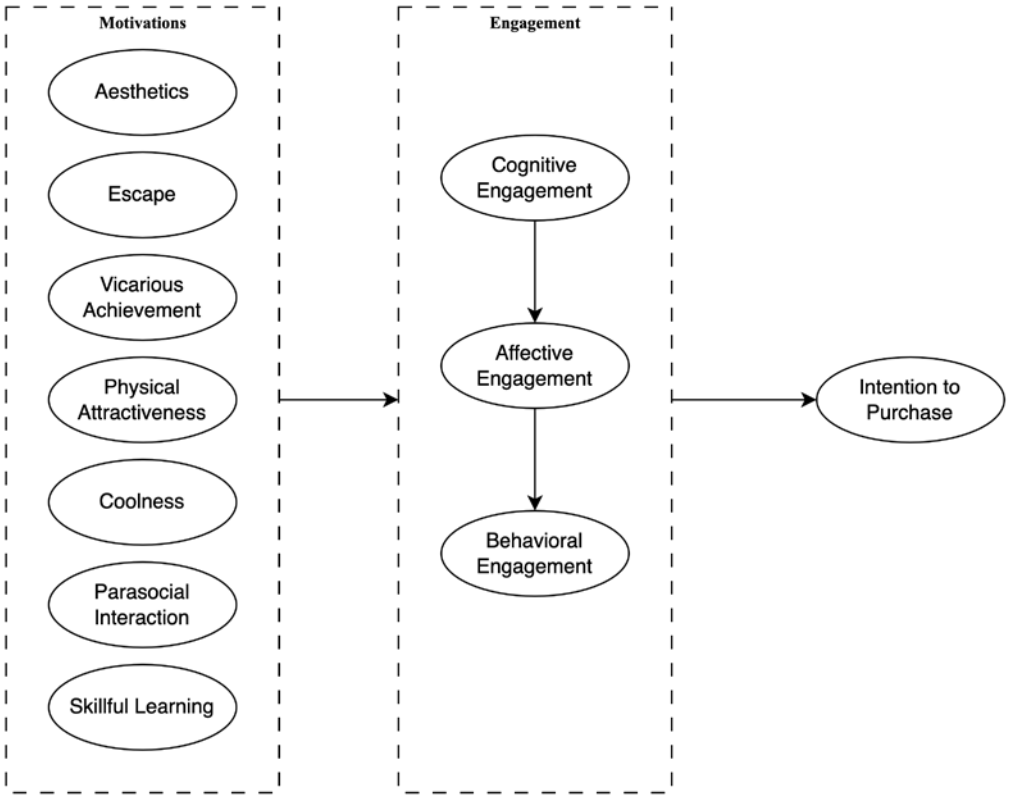
Impact of Esports Engagement on Purchase Intention

Purchase intention is one of the most important outcomes that brands expect from their consumers, and engagement is known to create a positive influence on purchase intention (Hollebeek et al. 2014). The findings of Huang et al.'s (2017) study suggested that entertainment and self-presentation triggered consumer engagement in mobile social network games, which stimulated purchase intentions during the game. Similarly, Ji and Hanna (2020) showed in their study that heavily engaged consumers are more willing to buy esports merchandise than less engaged consumers are. The engagement literature also provides evidence that both affective (e.g., Barari et al. 2020, Harrigan et al. 2018, Harmeling et al. 2017) and behavioral engagement (e.g., Abbasi et al. 2020, Harrigan et al. 2018) affect purchase intention. Therefore,

H5a: Affective engagement has a positive impact on the intention to purchase.
H5b: Behavioral engagement has a positive impact on the intention to purchase.

In line with the proposed hypotheses, Figure 1 visually represents the theoretical model that integrates the key variables identified in the literature. The figure illustrates the interrelationships and hypothesized directional effects between the variables, providing a visual framework for understanding the dynamics of online esports engagement.

Figure 1. *Theoretical Model*



Research Methodology

Data Collection Procedures

A quantitative approach was adopted to test the hypotheses. The target population of the research was online esports spectators. To gather data, an online survey was designed, taking into consideration the specific characteristics and interests of esports enthusiasts. Responses were collected through snowball sampling technique. This approach involved recruiting participants who were already familiar with esports games and had a vested interest in the subject matter. The initial group of online esports spectators who completed the survey played a crucial role in facilitating the distribution of the survey to their contacts within the esports communities.

Survey items were drawn from established scales that have been widely used in previous studies focusing on similar topics. The online survey included measures of nine esports motivations adapted from Trail and James (2001), and Hamari and Sjöblom (2017). Further, measures of coolness (Smock et al. 2011, Sundar and Limperos 2013), and parasocial interaction (Labrecque 2014) and Vivek et al. (2014)'s, and Hollebeek et al. (2014)'s engagement measures were adapted to esports to measure esports engagement. Finally, the intention to

purchase scale was based on O'Reilly et al. (2008)'s study. Each of the constructs was measured with more than three items that were on a 5-point Likert-type scale, "1" being "strongly disagree" and "5" being "strongly agree". The descriptive data were analyzed in SPSS and the testing of both the measurement and structural model was conducted on AMOS.

Participant Demographics

A total of 726 participants completed the survey. After omitting the ones with missing data and incorrect answers to the filter question, 436 responses were found eligible to be used in the analysis. Most of the participants were men (81.7%), single (75%), and highly educated (75% undergraduate or graduate level). The participants' familiarity level with esports was measured with length of time they have been watching eSports. 80% of the participants claimed to watch esports for more than 3 years and the share of the spectators who claimed less than 1 year was 5.5%. Participants used Youtube (83%) and Twitch (74%) to view esports. Participants were mostly from Turkey (57.9%), followed by Brazil (8.4%) the United States (7.3%), Spain (4.8%), and others.

Research Findings

Assessment of Measurement Model

The measurement model included esports engagement with three dimensions (cognitive, affective, behavioral; four items each), engagement motivations consisting of 9 dimensions (36 items in total,) and purchase intention (five items). A confirmatory factor analysis (CFA), using the maximum likelihood method was conducted to test the measurement model, assess the overall measurement quality. The goodness of fit statistics indicated a good measurement model fit (X^2: 3037.45; X^2/df: 2.29; CFI: 0.917; TLI: 0.907; and RMSEA: 0.054). Convergent validity was tested with measures of Cronbach's alpha, average variance extracted (AVE), and composite reliability (CR). All the loadings were significant and the standardized loading estimates were over 0.5, the AVE values of the constructs were over 0.5 and all the composite reliability values were over 0.7. Thus, convergent validity was ensured. Discriminant validity was assessed by comparing the square root of the AVE of each construct to all correlation measures (Fornell and Larcker 1981, Nunnaly 1978). Discriminant validity was also confirmed with high loading estimates to the appropriate constructs with no cross-loadings (see Table 1).

Table 1. *Convergent and Discriminant Validity*

	CR	AVE	PURC.INT.	VICH.ACH.	AEST.	DRAMA	ESCAPE	SKLL.LEARN	SOC.INT.	PS.ATTR.	ENJ.ofAGR.	COOLNESS	PARASOCIA	COGN.	AFFC.	BEHV.
PURC.INT.	0,948	0,784	**0,886**													
VICH.ACH.	0,902	0,754	0,355	**0,868**												
AEST.	0,913	0,778	0,264	0,496	**0,882**											
DRAMA	0,869	0,689	0,175	0,450	0,689	**0,830**										
ESCAPE	0,905	0,760	0,308	0,348	0,367	0,404	**0,872**									
SKLL.LEARN	0,928	0,683	0,165	0,440	0,674	0,777	0,468	**0,826**								
SOC.INT.	0,922	0,798	0,315	0,329	0,503	0,463	0,362	0,566	**0,893**							
PS.ATTR.	0,833	0,636	0,363	0,058	-0,012	-0,105	0,220	-0,142	0,099	**0,797**						
ENJ.ofAGR.	0,811	0,590	0,292	0,167	0,103	0,075	0,274	0,102	0,195	0,584	**0,768**					
COOLNESS	0,874	0,639	0,461	0,195	0,077	-0,021	0,204	-0,049	0,115	0,571	0,387	**0,799**				
PARASOCIA	0,890	0,575	0,416	0,512	0,516	0,498	0,440	0,577	0,530	0,169	0,295	0,343	**0,758**			
COGN.	0,906	0,707	0,421	0,454	0,569	0,544	0,342	0,656	0,548	-0,003	0,151	0,182	0,711	**0,841**		
AFFC.	0,922	0,749	0,424	0,600	0,637	0,606	0,532	0,682	0,543	0,043	0,250	0,200	0,774	0,777	**0,865**	
BEHV.	0,901	0,697	0,470	0,393	0,476	0,417	0,306	0,495	0,462	0,059	0,179	0,246	0,643	0,830	0,698	**0,835**

Diagonal values represent square root of AVE's.

Assessment of Structural Model

In the equations for testing motivation hypotheses, cognitive engagement, affective engagement, and behavioral engagement are conceptualized as dependent variables and engagement motivations (aesthetics, escape, enjoyment of aggression, social interaction, vicarious achievement, drama, skillful learning, physical attractiveness, coolness, and parasocial interaction) are the independent variables. On the other hand, in the equation regarding H4, purchase intention is the dependent variable, and cognitive engagement, affective engagement, and behavioral engagement are the independent variables. Standardized regression weights for significant relationships are shown in Table 2.

The fit assessment for the path analysis indicated that the hypothesized model was consistent with the data (X^2: 3077.92; X^2/df: 2.39; CFI: 0.911; TLI: 0.901, SRMR: 0.081; and RMSEA: 0.057). The model explained 64% of the variance in cognitive engagement, 81% in affective engagement, 60% in behavioral engagement, 26% of the variance in intention to purchase products advertised during esports events and/or products of official esports sponsors.

Results regarding cognitive engagement hypotheses (H1) revealed that social interaction (H1e: β=0.119; t=2.50; p<0.05) skillful learning (H1l: β=0.311; t=3.86; p<0.01), and parasocial interaction (H1k: β=0.460; t=6.99; p<0.01), have a positive influence on cognitive engagement.

According to the results of affective engagement hypotheses (H2) vicarious achievement (H2f: β=0.161; t=4.45; p<0.01), aesthetics (H2a: β=0.101; t=2.21; p<0.05), escape (H2c: β=0.179; t=4.99; p<0.01), and parasocial interaction (H2k: β=0.249; t=4.54; p<0.01) have a positive impact on affective engagement.

Results regarding behavioral engagement hypotheses (H3) revealed that escape (H3c: β=-0.132; t=-2.64; p<0.01), coolness (H3j: β=0.138; t=2.57; p<0.05), and parasocial interaction (H3k: β=0.205; t=2.70; p<0.01) positively impact behavioral engagement.

Cognitive engagement has an effect on affective engagement (H4a: β=0.398; t=7.35; p<0.01). Affective engagement impacts behavioral engagement (H4b: β=0.656; t=7.19; p<0.01) and intention to purchase (H5a: β=0.166; t=2.31; p<0.05). Lastly, behavioral engagement positively impacts intention to purchase (H5b: β=0.373; t=4.94; p<0.01).

Table 2. *Standardized Regression Weights for Significant Relationships*

Hypothesis	Hypothesized Relationship	Estimate	P
H1d	Social Interaction → Cognitive Engagement	0.119	P<0.05
H1i	Parasocial Interaction → Cognitive Engagement	0.460	p<0.01
H1j	Skillful Learning → Cognitive Engagement	0.311	p<0.01
H2a	Aesthetics → Affective Engagement	0.101	p<0.05
H2b	Escape → Affective Engagement	0.179	p<0.01
H2e	Vicarious Achievement → Affective Engagement	0.161	p<0.01
H2i	Parasocial Interaction → Affective Engagement	0.249	p<0.01
H3b	Escape → Behavioral Engagement	-0.132	p<0.01
H3h	Coolness → Behavioral Engagement	0.138	p<0.05
H3i	Parasocial Interaction →Behavioral Engagement	0.205	p<0.01
H4a	Cognitive Engagement → Affective Engagement	0.398	p<0.01
H4b	Affective Engagement → Behavioral Engagement	0.656	p<0.01
H5a	Affective Engagement → Intention to Purchase	0.166	p< 0.05
H5b	Behavioral Engagement → Intention to Purchase	0.373	p< 0.01

Discussion

This study showed that as spectators affectively and behaviorally engage with online esports, they become willing to buy products advertised during online esports events and/or products of official esports sponsors. The study also provided support for a hierarchy of effects between cognitive, affective, and behavioral esports engagement dimensions in respective order. The parasocial interaction with esports players is identified as the most influential factor in the engagement with online esports at all levels. Enhanced interactivity in online environments may cause spectators to form strong bonds with esports players (Labrecque 2014, Wulf et al. 2020) and experience a phenomenon of immersion with these players (Shin 2016). Our results show that this involvement, immersion, and one-sided relationship with the players may drive spectators to be actively engaged with online esports itself as well.

Other than parasocial interaction, skillful learning and social interaction have a positive impact on cognitive online esports engagement, which in return has a positive influence on affective engagement. Hollebeek et al.'s (2019) study supports that one of the motivations to engage with brands is customers' desire to learn about particular products/brands. Therefore, it can be inferred that the greater the spectators' need for acquiring esports-related knowledge, skills, or strategy (skillful learning), the more likely their mind will be occupied with esports, they will pay attention to anything related to it, and they will learn more about it. Tang et al. (2020) addressed the importance of knowledge acquisition as one of the motivations that differentiates esports spectators from traditional sports viewers. Moreover, Qian et al. (2020), found in his study that skill improvement was an important emerging motive in online esports spectatorship, suggesting that most esports spectators might also be active players who desire to learn from the best and improve their mastery of the game.

Social interaction motivation in esports, on the other hand, shows the strong group dynamic present in online esports, and implies that spectators are interested

in interacting with each other and offer their brand-related knowledge to others to create value (Lim et al. 2020). Socialization on esports online spectatorship centers on Twitch's chat function, over which spectators meet, interact, and befriend with each other in the online esports community (Qian et al. 2020). Similarly, online friendship formation was recognized to be an important factor in heavy gaming as well (Carras et al. 2017). This finding lends support to findings of Qian et al. (2020) and reverses the idea that esports players are socially isolated and previous findings that socialization is unimportant to esports spectatorship (Hamari and Sjöblom 2017).

Affective engagement is an important factor for esports because it has a positive effect on both behavioral engagement and intention to purchase the advertised or sponsored products. Besides parasocial interaction, vicarious achievement, aesthetics, and escapism exert positive influences on affective engagement in esports. When watching esports, viewers experience a sense of collaboration with esports players to achieve the goal of winning the game (Wohn et al. 2018, Lim et al. 2020). This experience of involvement and self-identification with the team may stimulate them to feel the same joy and pride as the team players when the team wins the game (Lim et al. 2020). Consequently, their enthusiasm and passion (affective engagement) toward esports may increase, making them like and enjoy esports. Similarly, aesthetics may trigger spectators' enthusiasm, excitement, and passion toward esports because it provides a positive sensory experience, which causes the spectators to enjoy the atmosphere and the game more (Ahn and Back 2018). Finally, escapism from stress and bothersome daily activities also increases spectators' affective engagement with esports. They may find esports to be a joyful escape from life's responsibilities and develop positive feelings toward it. Previous research supported this finding by showing that the escapism motivation explained passion toward esports (Choi 2019).

Escapism and coolness motivations influenced the behavioral engagement of esports spectators, along with the parasocial interaction motivation. Previous research found escapism to be a strong motivator behind esports usage (Weiss and Schiele 2013) and spectatorship (Hamari and Sjöblom 2017, Xiao 2020). However, our results show that escapism negatively influences behavioral engagement with esports, providing evidence contrary to previous findings. One plausible explanation might be the dichotomous nature of the escapism concept. Kuo et al. (2016) indicated that there are two forms of escapism: passive and active. Observing, watching, or exerting only minimal effort are considered forms of passive escapism (e.g., watching a film). On the other hand, consumers might also want to interact, be actively involved, and participate, which fall under the active escapism categorization (e.g., playing a video game). From this point of view, it can be said that esports spectators consider esports engagement to be a passive mode of escapism, which motivates them to enjoy watching the games passionately and affectively engage with esports. However, engaging with esports on a behavioral level requires active participation and effort, and a passive form of escapism has a negative effect on this type of engagement. Finally, coolness appears to be an important motivator of behavioral engagement with esports. Given the increasing numbers of spectators, players, and tournaments in esports (Hallman and Giel

2018), people might consider being heavily engaged in esports to be a cool and hip behavior, which would promote their self-image in their social circle. Similar findings on coolness motivation were also reported for new media types such as Facebook (Smock et al. 2011) and Instagram (Sheldon and Bryant 2016) in their hype periods.

Theoretical Contributions

The current research explores the psychology of esports engagement formed around the new ecosystem of esports business, sponsorship, and advertising. In doing so, it makes several contributions: (1) providing a definition of esports engagement; (2) exploring the hierarchy of effects between esports engagement dimensions; (3) creating a theoretical linkage between U&G, MSSC, and esports engagement dimensions; and (4) exploring how esports engagement leads to the willingness to buy products advertised during esports events and/or products of official esports sponsors.

There was no proposed definition for esports engagement in the extant literature. The closest definition was provided for video game engagement (Abbasi et al. 2017, 2019, 2020). Therefore, an "esports engagement" definition that incorporates the multidimensionality of the concept was provided in this study. Furthermore, this study investigated the relationship among dimensions of online esports engagement and contributed to filling this gap in the literature by investigating and finding support for the hierarchy of effects among the dimensions of esports engagement (cognitive, affective, and behavioral, respectively).

Previous research showed that U&G and MSSC work as a theoretical lens to provide a better understanding of motivations for watching esports (e.g., Hamari and Sjöblom 2017, Xiao 2020). Our research contributes to this research stream by showing that different motivations impact different esports engagement dimensions. Furthermore, this research extended the commonly utilized MSSC framework by adding parasocial interaction and coolness dimensions from new media engagement research. In doing so, it proved that parasocial interaction with esports players acts as an exceptionally strong motivator for online esports engagement in all dimensions. Finally, the research adds to the sponsorship and advertising literature in sports marketing (e.g., Pradhan 2020, Walsh et al. 2014) by showing that both affective and behavioral esports engagement has a positive impact on sponsorship and advertising effectiveness.

Managerial Implications

Parasocial interaction increases identification with and attachment to esports players and is important for holding the esports community together and keeping members engaged. One way to encourage this feeling is to create real-life-like conversations with spectators to make them feel that they are on the receiving end of the conversation. Live tools of social media; vlogging; storytelling; open-ended,

engaging language; and asking live questions to the spectators may encourage this type of interaction between the esports players and spectators.

According to Lowood (2010), esports players are artists, playing for audiences as an expression of art. Even though every esports game has its own aesthetic differences, based on rules, play communities, and relations to the screen, the interface of the esports games should be designed carefully to create an atmosphere of aesthetics for the audience. One way to achieve this is through careful analysis of the camera shooting and viewership through aesthetic lenses. Aesthetically minimal, sophisticated, and functional equipment designs might also help to increase the sensory experience of the esports spectators, increasing their cognitive and affective engagement. As Design Works (2020) put it, a holistic emphasis can be placed on form, weight, and technology integration of the gaming chair, mouse, and entire gaming ecosystem so that people's immersion in esport is secured.

Games, conversations, and bets might be increased for online esports spectators to interact with each other more often, convey their knowledge of the game and players, develop friendships based on common understanding, and socially support each other. For example, spectators can rate or recommend games for each other or leave tips and comments that would smarten each other's viewership. Moreover, informative content such as virtual courses on esports strategies and skills could be designed to enhance the esports learning process. Esports events and leagues should continuously improve and introduce innovative changes to keep their cool and interesting image alive. Finally, even though escapism creates a negative influence on behavioral engagement, research shows that people use esports to escape from the increased stress and anxiety of the COVID-19 pandemic (Cranmer et al. 2021). Given this fact, escapism should be a relevant and substantial dimension of esports positioning strategies in current circumstances.

Limitations and Further Research

As with all research, this research is not free from limitations. Cultural differences were not within the boundaries of this study; further studies should replicate the analysis with samples representing major esports markets (such as Asia, North America, etc.) to account for possible cultural differences. Further, a multidimensional analysis of purchase intention could yield to valuable results for understanding consumption patterns in esports. There are still numerous research questions to be addressed such as how engagement leads to in-game purchases, whether there are differences in purchase intentions of in-game purchases and purchases derived from sponsorship and/or advertising efforts, whether there are factors that hinder the purchase intention in esports and the effectiveness of esports streamers on esports related purchases. Behavioral engagement metrics such as viewing time and frequencies, number of comments, and number of participants in the audience could also provide insights for evaluating actual consumption patterns. A particular focus on game genres could also reveal fruitful implications because different types of games require different play or watch times, and people might have varying expectations and motivations as well (Ghuman and Griffiths

2012, Johnson and Gardner 2010, Qian et al. 2020). For instance, enjoyment of aggression could be a unique motivation for specific game genres. It could be argued that ones who enjoy nonviolent games (e.g., FIFA, NBA2K) may have divergent motivations than those who spectate violent games (e.g., CS: GO, PUBG).

Conclusion

This research contributes to the understanding of esports engagement within the context of esports business, sponsorship, and advertising. The study provides a definition of esports engagement and explores the hierarchy of effects between its dimensions. By linking user and gratification (U&G) theory and engagement theory in esports, the research highlights the impact of different motivations on various dimensions of engagement. It particularly emphasizes the role of parasocial interaction as a strong motivator for online esports engagement across all dimensions. Additionally, the study demonstrates the positive influence of both affective and behavioral engagement on sponsorship and advertising effectiveness.

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Situation Awareness: A Pivotal Process for Sensemaking and Decision Making in the Learning and Practice of Physical Activities

By Paul Godbout[*]

In physical education (PE), reflection on action is usually referred to in relation with pedagogical approaches such as experiential learning, constructivism and social constructivism. In organization systems, sensemaking has been discussed in relation with situation awareness (SA), a construct closely related not only to decision making but to understanding as well. In recent years, researchers interested in decision making in high-level sport performance have taken an interest in SA. The purpose of this explanatory article is to examine the applicability of the SA construct, including its related DM and sensemaking processes, to the teaching/learning and performing of diverse categories of physical activities such as sports, dance, fitness activities, outdoor activities and leisure activities in general. In a first section, the author distinguishes two types of SA, current SA and reflected SA, in relation with reflection in action and reflection on action. With regard to the involvement of one or several individuals, three SA facets are suggested: primary SA, distributed SA, and socially shared SA. Following a short discussion on the relationship between SA and the data/frame theory, the author examines the process of framing physical activities in view of situation awareness. Finally, the metacognitive side of framing and situation awareness is briefly discussed in terms of individuals who come to select particular observational cues that work better for them.

Keywords: *situation awareness, data/frame theory, sensemaking, decision making, frame building*

Introduction

Since Schön's seminal publication on the reflective practitioner (Schön 1983), there has been on a regular basis numerous publications discussing reflection in and on action applied to different fields of practice, including that of education (e.g., Atkins and Murphy 1994, Bjørke et al. 2022, Donaghy and Morss 2000, Downham and Cushion 2022, Johns and Freshwater 2009, Jung 2012, Larsen et al. 2016, Munby 1989, Somerville and Keeling 2004, Treadwell and Taylor 2017). The field of dance education has given a good deal of attention to students' and practitioners' reflection on action (e.g., Leigh 2017, Orrell 2021, Petsilas et al. 2019). In Physical Education (PE),–learners' reflection on action has been discussed at times (Godbout 2001, Gregg 2013, O'Connor 2019, Treadwell and Taylor 2017, Williams and Wainwright 2016), although most publications have considered reflection as a way of improving the efficiency of professional practice or as a part of vocational training (e.g., Crawford et al. 2012, Moon and Lee 2022,

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Tsangaridou and O'Sullivan 1997). Rather than being discussed in itself, students' reflection has also at times been associated with critical thinking (e.g., Donnelly et al. 1999, Gréhaigne and Godbout 1999, Jones et al. 2023, Pill and SueSee 2017). More than 20 years ago, Godbout (2001, p. 12) stated: "In a way, the teaching/ learning process may then be viewed as an encounter between a reflexive teacher and reflexive learners". Nevertheless, despite a seeming shift to a learner-centered paradigm, "... there is consistent research that preservice teachers hold on, or revert, to the conceptions they experienced as school students (Richards et al., 2014)" (Moura et al. 2023, p. 162).

Whether learning to perform a physical activity in a learner-centered context or self-managing its regular practice, individuals need to be aware of the situations they find themselves in if they are to manage appropriately their practice. Physical activity self-management implies reflection in and/or on action. In addition to the case of teachers' practice, reflection on action (RoA), in a learning context, is often associated with processes such as authentic assessment (Zessoules and Gardner 1991), student learning regulation (e.g., Alexander and Murphy 1998, Järvelä et al. 2015) and metacognition or metacognitive awareness (Dinsmore et al. 2008, Helyer 2015, Perkins 1992). In physical education, RoA is usually referred to in relation with pedagogical approaches such as experiential learning, constructivism and social constructivism. However, for reflection to be efficient, concerned individuals need a proper and informed perception of the reality encountered.

A construct labeled 'situation awareness' (SA) was developed, in particular, by Endsley (1995, 2015) in relation with incidents- or crises-related working duties (aviation, military, energy production, medicine, etc.). The SA construct relates to an individual's level of consciousness of the particular situation he is involved in, given that the situation calls for some action based on this individual's decision. The efficiency of one's SA is particularly critical in time-constrained situations with potential serious repercussions. As well explained in Endsley's model (1995, p. 36), SA is defined as made of three hierarchical levels: "the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future". These three levels lead to decision and action. It follows that SA naturally relates to decision making (DM) (Endsley, 1995), a process that has been discussed on several occasions with regard to high performance in sports (e.g., Ashford et al. 2021a, 2021b, Macquet 2016) but also with regard to the teaching of team sports in Physical Education (e.g., Godbout and Gréhaigne 2022, Gréhaigne et al. 2005, McBride and Xiang 2004, O'Connor et al. 2017).

Another construct labeled 'sensemaking' (see Author's note 1) was developed with a focus on how individuals work, the purpose being to make sense of the information and situations in which they find themselves, largely at the organizational level, with respect to explaining organizational accidents or unusual events (Brown et al. 2015, Endsley 2015). As stated by Klein et al. (2007, p. 114), sensemaking is "the deliberate effort to understand events. It is typically triggered by unexpected changes or other surprises that make us doubt our prior understanding". In other words, sensemaking relates to how people interact with information and make sense of a problem situation, how they proceed to understand

narratives or processes. Sensemaking has been discussed with regard to various areas of education (e.g., Biccard 2018, Fitzgerald and Palincsar 2019, Lim et al. 2019, Odden and Russ 2019). To the author's knowledge, with the exception of a few recent publications by Macquet (2016), Macquet and Kragba (2015), and Rönnqvist et al. (2019), sensemaking as such has not been largely discussed in relation with the learning or practice of sports and other non-utilitarian physical activities (see author's note 2).

The purpose of this explanatory article is to examine the applicability of the situation-awareness construct, including its related decision-making and sensemaking processes, to the teaching/learning and performing of diverse categories of physical activities such as sports, dance, fitness activities, outdoor activities and leisure activities in general.

Situation Awareness, Decision Making and Sensemaking

In this article, it is implied that SA refers to individuals' consciousness of their purposeful rapport with their physical and social (if involving several people) surroundings. Alluding to a 'purposeful rapport' means that the person's experience of the situation goes beyond a simple perception of that person's environment. For instance, with regard to visual perception, SA would go beyond seeing or looking; it would rely on informed observation. In other instances where sounds, smells or some other sense would be thought critical, the same upgrading of perception would apply.

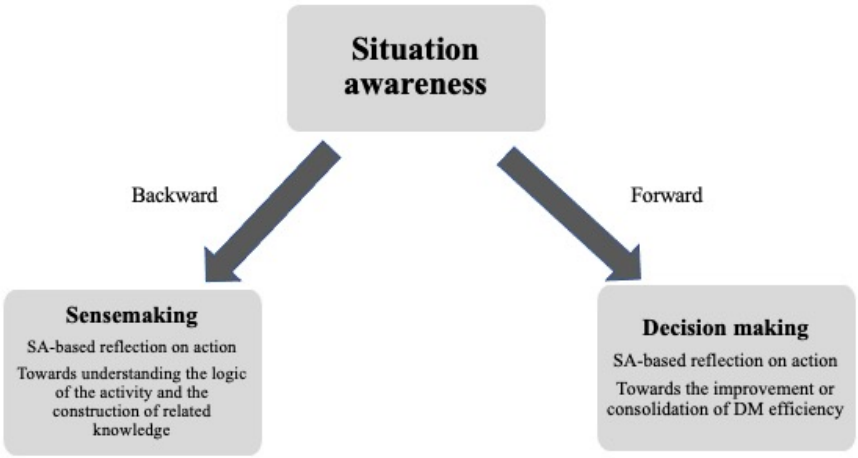
In the unfolding of events, an individual's SA is a dynamical process as one's mind continuously adapts to the changing reality. Referring to this dynamic dimension, with regard to invasion team sports, Godbout and Gréhaigne (2022, p. 71) have used the term "*Current Situation Awareness*" (CSA). "The dynamic SA players and, to a lesser extent, teammates-observers are involved with may be analogically compared to a car driver's SA as this individual keeps constantly glancing around, keeping informed of the dynamic environment and ready to take action if and when appropriate". Godbout and Gréhaigne (2022) have also suggested the term "*Reflected (Deferred) Situation Awareness*" (RSA) to designate a person's reflection on a prior SA. While a performer's CSA (see author's note 3) would serve as a basis for reflection *in action*, RSA would contribute to reflection *on action*. With regard to the individual(s) concerned with either CSA or RSA, one may consider facets that Godbout and Gréhaigne (2022) have designated as:

- primary SA (experienced by the individual directly involved in the action);
- distributed SA (independently experienced by observers and communicated to the decision maker[s]);
- socially shared SA (experienced by a group of individuals involved in the action and who have developed common frames of reference).

Although SA has been particularly discussed in relation with DM in sport activities, it may, in fact, be looked at from two perspectives, that of DM and that

of sensemaking, and support reflection on action in both cases (see Figure 1). The relationship between SA and DM in sports, particularly in invasion team sports, has been discussed recently by Godbout and Gréhaigne (2022); in this case, SA-based reflection on action, or RSA, focuses on the improvement or consolidation of the learners' or performers' DM efficiency. Another perspective little explored in physical activity practice (PAP) is the relationship between SA and sensemaking; in this case, reflection on action, or RSA, focuses on understanding the logic of the activity and the construction of related knowledge, a process that will be discussed in the following section in relation with the data/frame theory.

Figure 1. *Decision Making and Sensemaking: Two Potential Follow-ups of Situation Awareness*



Situation Awareness and Data/Frame Theory

Individuals' attentional (perceptual and cognitive) limitations have been evoked or discussed by several authors (e.g., Holgado 2011, Macquet 2016, Miller 1956, Ochanine 1978, Stanton et al. 2001) and it is generally agreed that experts base their decisions on less and better focused clues than novices (Herbig and Glöckner 2009, Stevenson 2013, Ashford et al. 2021b). After reviewing 16 information processing studies in relation with DM, Ashford et al. (2021b) reported that players' DM involves the possession of specific key perceptual–cognitive skills such as: "the utilization of domain knowledge in perceiving informational cues ...; (b) the identification of global, salient and predictive cues ...; (c) rapid retrieval of knowledge from memory representations ...; (d) option generation ...; and (e) the role of intuition in the form of the take the first heuristic ..." (p. 12). Thus, it appears that learners' challenge for developing an efficient SA is to rely on frames of reference based on the most reliable situational structure(s)

of the activity at hand, meaning structures that offer, with a minimum of possible relations, the maximum relevant information on situations encountered.

Data-Frame Theory of Sensemaking and Sensemaking Processes

As alluded to earlier, sensemaking (or making sense of) relates to a cognitive process through which individuals come to understand the unfolding of previous events that led to a given situation they are faced with. Sensemaking "involves knowledge construction from information and gaining understanding of a problem-situation" (Pontis and Blandford 2015, p. 842). Sensemaking may thus lead to the understanding of the logic of a given physical activity considering different dimensions of its dynamics (personal, social, temporal, situational, environmental).

Klein et al. (2007) identified the sensemaking structure as '*data-frame theory of sensemaking*'. "The data-frame (D/F) theory postulates that elements are explained when they are fitted into a structure that links them to other elements. We use the term *frame* to denote an explanatory structure that defines entities by describing their relationship to other entities ... [and guides] the search for more data" (Klein et al. 2007, p. 118). According to these authors, it is possible to differentiate several types or mental processes of sensemaking. At the time of their 2007 publication, Klein and his collaborators had identified seven such processes operating in different ways: (1) mapping data and frame; (2) elaborating a frame; (3) questioning a frame; (4) preserving a frame; (5) comparing frames; (6) re-framing; (7) constructing or finding a frame. The purpose of this article is not to review extensively the development of the D/F theory but to consider how elements of that theory may enrich the way we envision the teaching/learning of various physical activities in PE. Readers interested in investigating further the development of the theory may consult, for instance, Pontis and Blandford (2015), Klein et al. (2006a, 2006b), and Moore and Hoffman (2011).

When considering D/F theory, what comes to mind is the connection that can be made with two fundamental constructs of constructivism, namely *assimilation* and *accommodation*. For Klein et al. (2007, p. 134), "the cycle of elaborating the frame and preserving it in the face of inconsistent data is akin to Piaget's (1952) function of assimilation. The process of reframing is akin to accommodation". As expressed by Macquet and Kragba (2015, p. 346), "sense-making pertains to a double cycle comprising two steps: building the frame (i.e., framing) and maintaining it, with reference to Piaget's concept of assimilation, and reconsidering the frame and enriching it by new information (i.e., reframing), with reference to Piaget's concept of accommodation". Table 1 presents the association the author of the present article makes between the seven cognitive processes involved in the Data/Frame model (Klein et al. 2007, Pontis and Blandford 2015) and Piaget's *assimilation* and *accommodation* constructs.

Table 1. *Seven Cognitive Processes Involved in the Data/Frame Model (Klein et al. 2007, Pontis and Blandford 2015) and Relationship with the Constructs Assimilation and Accommodation*

Assimilation Assimilation occurs when a learner receives new information or perceives a new situation and manages to fit that information or reality into an already existing mental schema (Godbout and Gréhaigne 2021).	Accommodation Accommodation occurs when a learner transforms a pre-existing mental schema in order to take into account dissonant perceptions of reality (Godbout and Gréhaigne 2021).
	1- Mapping data and frame: involves connecting the data and a frame. Depends on the data and information that is available, and on an individual's aims, repertoire of frames, and attitude.
2- Elaborating (expanding) a frame: one explores an initial frame, searching to add details and fill in slots, thus expanding it.	
	3- Questioning a frame: If, while working with the frame, one encounters data inconsistent with that frame, one may decide that that frame needs to be replaced without being certain whether the frame is incorrect or not (see #4)
4- Preserving a frame*: When inconsistencies previously found are considered not relevant or strong enough to dismiss the frame one has been working with, that frame is preserved.	
5- Comparing frames: In some cases, several frames may be considered at the same time; those frames may be compared to fully appreciate the dimension of the task. According to Klein et al. (2007), individuals can work with a maximum of three alternative frames at the same time.	
	6- Reframing: When one accumulates inconsistencies and contradictory evidence, one needs to replace the frame. In some cases, data elements previously discarded for a frame may be found relevant in a new frame as new cues emerge.
	7- Constructing or finding a frame: When one encounters a situation that does not make sense, or the initial frame cannot be reframed, one seeks and constructs a new frame.

***** This process may also be associated with the notion of 'adaptation'. Adaptation represents a state of balance between assimilation and accommodation, a phase when the reality perceived, whatever its variations, fits into the learner's mental scheme (Piaget 1962). "Sensemaking usually ceases when the data and frame are brought into congruence" (Klein et al. 2007, p. 126).

In the French literature, Ochanine (1978) offered the concepts of cognitive representation (*image cognitive*) and operative representation (*image opérative*)

(Holgado 2011). The cognitive representation reflects objects in all the diversities of their accessible properties. For its part, the *operative representation* (or representation in action) relates to selected properties likely to ensure the best task result (see author's note 4). The operative representation is considered to be a reflection of the *operative structure*, that is the most reliable structure of the object for a given task, meaning the structure that offers, with a minimum of possible relations, the maximum relevant information on the object (Holgado 2011). In this article, the author will consider that as an explanatory structure, a frame is similar to an operative structure progressively enriched by new elements that fit the frame. Other authors may refer to schema or data-structure to designate such explanatory structures (Pontis and Blandford 2015), or to mental models (Ellis et al. 2014). According to Klein et al. (2007), frames may be developed based on contexts such as, for instance, "a story (explaining a chronology of events), a map (explaining location, showing distances and directions), a script (explaining roles), or a plan (describing a sequence of intended actions)" (Pontis and Blandford 2015, p. 843).

In relation with D/F theory, Klein et al. (2007, p. 119) saw sensemaking as "a process of framing and reframing, of fitting data into a frame that helps us filter and interpret the data while testing and improving the frame and cyclically moving forward to further adapt the frame". For Endsley (2015, p. 18), as illustrated earlier in Figure 1, "sensemaking is generally backward looking ... it focuses on forming reasons for past events and diagnosing the causative factors for observed faults".

Sensemaking in Relation with Physical Activity

Although originally developed with a focus on ergonomic problems in organizations (Weick 1995), sensemaking has drawn the attention of researchers in the area of decision making in sport organizations (e.g., Alder 2015, Bentzen et al. 2020, Djaballah et al. 2017, Verweel 2006, Wegner et al. 2019). Given the relationship between sensemaking and decision making and the fact that understanding and decision making are key processes in any sport performance, sensemaking was bound to draw the attention of researchers in relation with decision making by athletes and/or coaches in high-level-performance contexts (e.g., Alder 2016, Macquet 2016, Macquet and Kragba 2015). The link was established particularly through a key construct related both to sensemaking and decision making, that of *situation awareness* (Endsley 1995, 2015, Klein et al. 2007, Macquet 2016). As early as 2004, as far as the author can see, there was a publication formally targeting SA in relation with sport (James and Patrick 2004). In an overview of their chapter, these authors wrote: "Given the paucity of research that investigates the role of SA in sport, this chapter will concentrate on the various paradigms that have been used to study it, primarily perceptual processes and anticipation, all of which are in scope to SA" (p. 298). Thereafter, other publications followed, fueled by the seminal publications of Endsley and Klein et al. (e.g., Caserta and Singer 2007, Huffman et al. 2022, Macquet and Stanton 2014, Murray et al. 2018, Schei and Giske 2020).

Despite this association with sports, SA, as related to decision making and sensemaking, may and should be connected with a much larger spectrum of physical activities as will be discussed in the following section.

Framing Physical Activities in View of Situation Awareness

The author has written earlier that sensemaking may lead to the understanding of the logic of a given physical activity considering different dimensions of its dynamics (personal, social, temporal, situational, environmental). The personal dimension refers to each performer's permanent or temporary characteristics that may have an influence on the way he or she performs a given PA. The social dimension of a PA dynamics refers to the fact that it involves at least two or more interacting individuals, either partner(s) and/or opponent(s). The temporal dimension refers to the speed of the unfolding of the activity or its duration. The situational dimension refers to the particular configuration of performance individuals find themselves engaged in. Finally, the environmental dimension refers to the physical environment in which the PA concerned is performed, including weather conditions. Variations in these dimensions reflect the diversity of physical activities individuals may encounter during their childhood, adolescence and adulthood as demonstrated by O'Connor et al. (2022) in their expanded classification for games and sports in PE.

Adapting Frames to Diverse Activities

Two characteristics of physical activities that can bear significant consequences for the use of SA are their level of nonlinearity and the degree of time constraints for decision making they impose on performers. On the one hand, the more nonlinear physical activities are, the more unexpected occurrences may cause havoc, calling for a high SA level while linear activities unfold according to expected scenarios. On the other hand, highly time constrained activities offer little time to grasp any given situation and reflect in action (hence the usefulness of RSA) while activities offering little time constraints provide ample time to seize the situation and reflect in action. For instance, invasion team sports such as ice hockey or basketball are fairly representative of highly nonlinear and time constrained activities while taking a walk on familiar grounds or cross country skiing on flat lands would be representative of fairly linear activities with little time constraints for DM. In addition to the logic of activities concerned, other elements such as weather conditions, the physical environment, the appropriateness of equipment, and the level of one's fitness may bring about unexpected and possibly safety-related situations requiring more or less quick decisions and adjustments. Interested readers may consult O'Connor et al. (2022, Table 5) to find examples of tactical questions that can eventually be related to SA with regard to diverse types of PAs. Readers will note that whereas time constraints bear consequences for DM, they do not directly influence sensemaking based on RSA.

Also, the less time constraints there are when performing a given activity, the more available time there is for reflection in action.

Readers will remember the author mentioning earlier, in reference to Klein et al. (2007), that frames may be developed based on a map, a story, a script or a plan. As an example, in invasion team sports, this could analogically translate into cues related to the use of space and time on the court (map), critical incidents (stories), the distribution of roles among student-players depending upon both teams' competency network (script), or strategic action plans (plan). The same reasoning may be applied with most physical activities included in the PE curriculum or selected on a free basis by students and adults in their everyday life. Targeted frames may concern the technical or tactical aspects of PAs performed, their safety-related aspects with regard to the environment, the weather, or proper equipment and clothing, etc. The safety-related aspects, for instance, would seem particularly appropriate in situations of outdoor or adventure education (Boyes et al. 2019, Sutherland and Legge 2016, Williams and Wainwright 2016). As students' sensemaking develops, the number of frames stored in their memory increases. Based on their studies, Klein et al. (2007, p. 126) stated that "Experts reason the same way as novices, but have a richer repertoire of frames". One might add that their frames may be better structured in terms of cue selection (lesser number and better appropriateness). However there appears to be a limit to the number of frames that can be considered at the same time. According to Klein et al. (2007, p. 140), "people may track two or three frames simultaneously, but rarely more than three". Targeting the right cues may be the key to efficient SA.

There is no single way for an individual or a group to develop, enrich, maintain or modify a frame, or reference mental model, on which lean or uphold SA. Klein et al. (2007, pp. 122-123) stated that "the frame is inferred from a few key anchors, ... These anchors elicit the initial frame, and we use that frame to search for more data elements". Thus, although initially based on selected meaningful key anchors, the frame is a dynamic operative structure that may be enriched as experiences cumulate and provide additional meaningful cues. As long as new data fit with the frame, new knowledge is assimilated. Otherwise, the frame is questioned, re-examined and modified through accommodation. We have seen earlier that Klein et al. identified several cognitive processes that lead to the development, selection, adjustment or rejection of frames (Table 1). Distinctions among these processes, as presented by Klein et al., make more explicit actual circumstances in which either assimilation or accommodation is at work and help understand that (a) frame development is a dynamic process and (b) as motor skills improve and DM procedural knowledge increases, different frames initially rejected may prove to be useful.

Helping Learners Build Significant Frames

There might be a 'chicken-and-egg' paradox in the initial selection of key anchors for a given frame at the time students have little experience with a given activity. For instance, Pontis and Blandford (2015) conducted a study to explore how academics construct knowledge of their community through building an

understanding of the concept of influence (being influential and becoming influential) and what sensemaking activities or processes (see Table 1) they undertake while making sense of that community. Discussing whether there is an order in which cognitive processes of sensemaking are initiated, Pontis and Blandford (2015, p. 857) stated "Building an understanding which leads to the construction of an explanatory structure emerged as an essential initial activity or starting point for making sense of a structure task. ,,, participants could not start the [sensemaking] process until they managed to construct an explanatory structure".

Prior to learners' formulation and selection of initial key anchors, divergent questioning by the teacher should initiate the former's tactical thinking process, helping them construct a few basic action rules and management rules (e.g., see Gréhaigne et al. 2005 for action rules and play organization rules in invasion team sports; see also Godbout 2021b for exercise-monitoring procedures and exercise-management rules). Determining key anchors rests on one's understanding of what is at stake during the practice of the activity and what SA should focus on (e.g., Gregg 2013, Mercê et al. 2021). In that respect, problem-based (Ryan 2021) or project-based (Simonton et al. 2020) learning approaches would seem most appropriate, providing learners with opportunities for reflecting on SA-related cue selection given conditions of learning or conditions of practice (see the PA dimensions mentioned earlier). Faced with a problem to solve or a project to conduct, learners are challenged to resort to divergent and strategic thinking when targeting a particular aspect of the activity and selecting cues to be included in that frame.

Metacognitive Side of Framing and Situation Awareness

Considering what has been written in this paper so far, it should now be obvious to readers that the data/frame theory involves a constructivist approach to sensemaking. Students' or performers' participant progressive elaboration of efficient frames may thus be associated with metacognitive processes as these individuals come to select particular observational cues that work better for them in terms of SA. Discussing metacognitive awareness and self-regulation in the learning of team sports, Godbout and Gréhaigne (2020, p. 441) wrote: "For students, experiencing metacognitive awareness means knowing about their own thinking. Knowledge of cognition concerns an awareness of one’s strengths and weaknesses, knowledge about strategies and why and when to use those strategies". Perkins' (1992) categorization of metacognitive learners (tacit, aware, strategic, and reflective learners) may be considered in terms of their progress framing-wise. Analogously, *tacit framers* would not think about any particular key anchors or observational cues, seeing situations as they come and making the best of them. *Aware framers* would notice some aspects of a situation as positive or negative without being proactive about it and looking for such occurrences. *Strategic framers* would organize their framing by using problem solving, grouping and classifying cues, seeking evidence and making framing choices. In a sense, they would be using some of the processes listed previously in Table 1. Finally,

reflective framers, beyond being strategic about their framing, would also reflect upon their framing success or failure, taking notice of their effective or ineffective SA and making adjustments accordingly (questioning a frame, preserving a frame or reframing). In that respect, the choice of frame components might vary from one learner to the other depending upon their sensitiveness to one cue over another. For a more extensive discussion on metacognitive awareness and self-regulation of learning, readers may consult Godbout and Gréhaigne (2020, pp. 441-443).

Beyond the effectiveness of particular frames in term of selected cues, the matter of the breadth or comprehensiveness of frame selection should also be considered as mentioned before. Whereas tacit or aware framers could be lured into considering only the motor and/or tactical requirements of the activity per se, strategic and reflective framers would consider a wider spectrum of cues based not only on the internal logic of the activity but on the logistics of its practice as well (equipment, physical environment, weather conditions, safety measures, etc.).

Situation Awareness and Performance Appreciation

So far, this article has been devoted to decision making and sensemaking as they may apply to learners and users with regard to physical activities. In a recent publication, Godbout (2021a) argued that physical literacy encompasses physical performance appreciation. He wrote:

> an individual's rapport with PA may be looked at from a performing point of view, in terms of PA practice, and from an observing point of view, in terms of PA-performance appreciation. As is the case for the performing aspect, such an appreciation draws on the intellectual, psychological and social development of a person and, inversely, has an impact on it. One’s performance appreciation capacity may vary from the fan stage to one of a connoisseur and ultimately one of expert-analyst. Each stage will require a corresponding level of PL-related language and PL-related intelligence. (p. 9)

Although SA has been at this point examined with regard to reflection in/on action, one should not overlook the fact that physical performance may be observed not only by student observers in a learning context and by teammates in a context of team activities, but also by bystanders or spectators. The construct of distributed SA mentioned earlier may be evoked in relation with reflection on action in a learning context involving partners who observed teammates' performance and provide augmented feedback (see Godbout and Gréhaigne 2021, p. 50, for a discussion on student observation). In addition, progressively learning how and what to observe in performance situations may be seen as a prelude to the experience of performance appreciation as spectator. The better prepared in term of situation awareness, the better one can eventually appreciate PA performances as a fan, a connoisseur or ultimately an expert-analyst. Although not a priority objective in itself in a PE context at school, one cannot ignore the importance of

priming high-school students and, where appropriate, college students for an informed appreciation of others' physical performances throughout their adulthood.

Conclusion

This article has discussed situation awareness as a key process for decision making, sensemaking and understanding in relation with any physical activities undertaken by learners and physically active adults. Knowledge and understanding, as by-products of sensemaking, remain two fundamental attributes that characterize physically-educated, or physical-activity literate, individuals. Becoming self-directing, self-actualizing and self-regulating in terms of one's physical-activity practice implies regular reflection in and/or reflection on action on the part of learners and active adults as well. The efficiency of that reflection relies in good part on the quality of the information provided by each individual's SA and its related frames.

Author's Note 1

Whereas some authors (e.g., Klein et al. 2007, Weick 1995) use the term sensemaking, others (e.g., Dervin 1998) use the written version 'sense-making'. Weick (1995, p. 4) defined the term as "the making of sense". For their part, Brown et al. (2015, p. 266) wrote: "There is, though, an emergent consensus that sensemaking refers generally to those processes by which people seek plausibly to understand ambiguous, equivocal or confusing issues or events". In this article, we will use 'sensemaking' as it is associated with the data/frame theory.

Author's Note 2

The term 'non-utilitarian' refers to these categories of physical activities usually not related to the work force. Activities concerned relate to physical education, fitness, recreation, high performance and dance. By extension, activities of professional athletes, dancers and other high performers may also be included.

Author's Note 3

Throughout the paper, the term 'performer' refers to an individual executing or carrying out a physical activity. Thus, in the context of the article, it does not refer to high performance as such; it rather designates a student in a learning context or a person involved in some physical activity.

Author's Note 4

For instance, at the time of a counterattack in an invasion-team-sport situation, the cognitive representation (*image cognitive*) would include all the perceptual and mental cues accessible to the player who has possession of the ball, including the size of the court, his or her position on the court, the number of players, their strengths and weaknesses, their location and movement on the court, the agreed-upon strategy, the surrounding noise, and so on. For its part, the operative representation (image opérative) might include selected cues such as the player's position on the court, the position and movements of close opponents and partners, the agreed-upon strategy, and possible target(s) for a safe pass. As the player gets closer to the adverse goal, the operative representation would focus on the goalkeeper, immediate partners and opponents, possible angles of shot and other relevant cues

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Environmental Sustainability and the National Hockey League: A Review of the Seven Canadian Teams

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Environmentalists consistently note that the way we live and work is having devastating impacts on the environment, and immediate change is required if the planet is to be saved. Legislation is being enacted to force industries and companies to change their business practices so the impact of their programs and services is less damaging to the environment. Some organizations, including professional sports teams and facilities, have implemented environmentally friendly programs and practices to reduce their environmental impact. They have subsequently celebrated these developments as part of their corporate social responsibility (CSR) and corporate environmental responsibility (CER) programs. The researchers reviewed the programs and practices of the seven National Hockey League (NHL) teams based in Canada and, based on these assessments, offered suggestions for improvement based on the best practices of teams and facilities from other sports and facilities across the globe. These environmental programs should serve as the most critical component of their corporate social responsibility program.

Keywords: *corporate environmental responsibility, National Hockey League, Canada*

Politicians, climate researchers, and environmentalists have pointed to environmental sustainability as the number one challenge facing the planet and society (Leonard, 2006). The way we live, work, and travel have negatively impacted the health of our planet, and many authorities have suggested that life as we know it cannot be sustained without immediate and significant change (Brooks, 2013; Leonard, 2006). Increased pollution, heightened greenhouse gas emissions, and commensurate increases in the number of hurricanes, forest fires, and droughts are all the consequences of negative climate change brought on by excessive human consumption (Shepherd, 2022).

The need for significant change has not been lost on sports organizations, although the bulk of research in this area is focused on the major sports leagues in the United States and Europe. It is expected to be a priority area for all sports leagues in the future (Trendafilova et al., 2013). Many teams and their host facilities have adopted new programs, practices, and policies to power their facilities, reduce waste, and consequently reduce their carbon footprint and environmental impact (Trendafilova et al., 2013). Some have actively promoted these practices as part of their corporate social responsibility program, which also heightens community acceptance, corporate image and ultimately, their bottom line (Inoue & Kent, 2014). According to Barrett et al. (2019), these corporations are promoting their

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corporate environmental responsibility (CER) as part of their larger corporate social responsibility (CSR) program. As Porter and Kramer (2006) eloquently noted, effectively addressing the issue, making a difference for society, and strategically promoting the programs as part of a strategic CSR program makes business sense.

The sports industry can have a significant influence on the earth's natural environment. Many corporations have added importance to sustainability within their strategic plans. Even though most initiatives center around "conservation, recycling and compliance, sustainability has come of age in recent years, to the point that companies now report their actions and in many instances, attempt to influence their customers as well as the public about how to be "greener" (Blankenbuehler & Kunz, 2014, p. 75). Professional sports teams and their venues attract thousands of fans who also need to travel to the games. While in attendance, they purchase and consume many single-use products at concession stands and kiosks. Many of these products are not biodegradable, and in the past, were automatically transported to landfill sites. According to a report made by Sustainable Stadiums & Arenas - Waste Management (n.d.), the four major professional leagues in North America (i.e., the National Football League, Major League Baseball, The National Basketball Association and the National Hockey League) generate approximately 35,000 metric tons of carbon dioxide (CO2) each year from their fans' activities. Teams travel to geographically disparate locations for exhibition, league and playoff contests and produce excessive carbon emissions. These teams and their venues can have a major impact on the environment (Inoue & Kent, 2014; Trendafilova et al., 2013). The Sustainable Stadiums & Arenas - Waste Management Report (n.d.) confirms that professional sports organizations have had a substantial negative impact on the environment.

A number of professional teams and venues have recently adopted significant environmental sustainability projects. Several cities (e.g., Philadelphia, Detroit) have centralized their sports venues and ensured public transit support the venues. Fans can arrive and depart the games using public transit rather than having to bring personal vehicles. The centralization of the facilities and creative scheduling also allows the cities to eliminate concrete parking structures and the need to cover green space with concrete parking lots. Teams have encouraged their fans to also take part in "green" practices, both at sporting events and in their everyday lives.

Corporate Social Responsibility

Corporate social responsibility (CSR) is "a company's commitment to minimizing or eliminating any harmful effects on society and maximizing long-term beneficial impact" (Trendafilova et al., 2013, p. 298). Environmental sustainability is one area in CSR that has been gaining more interest in sport management and in professional practice. In particular, professional sports, teams, leagues, and venues have inflicted significant harm to the environment. Team, League, and facility officials are now recognizing this impact and focusing their attention on environmental issues as part of a strategic CSR program. Some of

these CSR initiatives include utilizing renewable energy sources, eliminating single-use packaging, using rainwater to resurface hockey rinks, and hosting green-themed events and advocacy campaigns (Prusina, 2022; Shepherd, 2022). These initiatives are recognized as discrete undertakings that try to improve the welfare of the environment and society. Consequently, "discreet undertakings that integrate environmental concerns into mainstream operations as a product of corporate environmental responsibility (CER), which broadly refers to a company's duty to cover the environmental implications" of its operations (Barrett et al., 2019, p. 35). When looking at CER in professional sports, some focus areas can include recycling, waste reduction, energy and conservation, and Leadership in Energy and Environmental Design (LEED) certification.

Companies participating in sustainable initiatives not only benefit the environment but the activities and programs can also benefit the company. Inoue and Kent (2014) and Trendafilova et al. (2013) stated that corporate credibility is positively impacted by the company's innovation and support for the environment as well as their involvement in the community. These factors then have a positive effect on their credibility in the aspects of trustworthiness and expertise. A company that demonstrates that it cares about the environment sends a signal that the future matters. Consumers might have a higher level of goodwill and trust in the company as a result (Inoue & Kent, 2014; Trendafilova et al., 2013). Promoting and following through on this commitment is important. However, their words and actions must align.

Sports teams have the opportunity to make changes and authentically promote their commitment "… due to the ability of a company, through CSR, to demonstrate its understanding of customer needs, which leads to high trustworthiness" (Inoue & Kent, 2014, p. 625). According to Inoue & Kent (2012), consumers and potential consumers often formulate their opinions of a company's credibility on the basis of three things, namely: (a) the characteristics of the organization; (b) the characteristics of the CSR initiative, and; (c) the characteristics of the cause. This perception can impact a consumer's decision to support, or not support the organization.

The National Hockey League Green Initiative

In 2010, the NHL launched a league-wide green initiative to promote sustainable business practices, educate fans and raise awareness on environmental issues. The NHL Commissioner Gary Bettman stated at that time that the "game originated on frozen ponds, most of our players learned to skate on outdoor rinks. For that magnificent tradition to continue through future generations, we need winter weather -- and, as a league, we are uniquely positioned to promote that message" (NHL Green, n.d.).

Since 2010, the NHL has kept track of its environmental sustainability achievements and proudly shares this information with the public each year. In 2011, the "Gallons for Goals" program was launched. NHL officials pledged to restore 1000 gallons of water through the purchase of Water Restoration

Certificates (NHL Green, n.d.) for every goal that was scored during the regular season, The NHL has proudly claimed that it has restored more than 88 million gallons of water over the past 10 years.

In 2012, based on the positive impact of the "Gallons for Goals" program, the NHL launched "The Legacy Tree Project" and linked it to the NHL draft. Like a seedling that could be nurtured into a large tree, the NHL planted a tree for every player selected in the draft. These trees were planted in the city hosting the draft and celebrated the launching of the professional careers of its new players (NHL Green, n.d.). The league planted more than 1,500 trees in the first five years of the program as another of the green programs in their CSR/CER strategy.

The NHL also helped make significant changes in the teams' facilities as each were retrofitted with more efficient and environmentally friendly LED Game Lighting programs. This change started in 2013 at the existing NHL arenas. New facilities also adopted the LED Game Lighting initiative. In 2014, the NHL released its first environmental sustainability report. It was the first league to report its carbon inventory, something that other leagues have now adopted. Energy innovations continue to be explored, with fuel cell innovation being adopted by the SAP Centre, the home of the San Jose Sharks.

The NHL continued to search for ways to reduce its carbon footprint. In 2015, in partnership with Constellation Energy, the NHL became the first league to publicly commit to offsetting its carbon footprint. The league has counterbalanced over 963,200 Mega Watt Hour (MWh) of energy since 2014 (NHL Green, n.d.). They have accomplished this "by focusing on innovations and efficiencies such as renewable energy, variable frequency drives and LED lighting" (Play It Forward, n.d.). That same year, the Excel Energy Center, home to the Minnesota Wild, became the first United States-based sports facility to achieve three environmental certifications, specifically the Xcel LEED, Golden Globes, and ASTM/APEX designation (NHL Green, n.d.).

League officials continue to demonstrate their commitment to environmental sustainability. For example, in 2016, the league launched the "NHL Greener Rinks Initiative" designed to educate hockey communities, municipal leaders and sports officials leagues about the new environmentally-friendly and cost-efficient technologies in the design and operation of community ice rinks. In 2018, the NHL Green advanced its commitment and released its second environmental sustainability report, and updated their five-year sustainability goals. Additionally, NHL Green entered a partnership with Chemours to continue educating the rink industry on environmentally sustainable construction and operating practices.

The NHL furthered its commitment to environmental sustainability in 2019 by focusing on the air travel demands placed on the teams due to the league schedule. They calculated the amount of carbon created from post-season team air travel and counterbalanced the carbon emissions that were produced. The league purchased 1,729 carbon offsets which balance the 3,811,000 pounds of carbon dioxide emissions produced by the jets covering the 4,583,100 miles that the teams travelled over the season (NHL Green, n.d.).

In 2020, and in celebration of the launching of the 10-year anniversary of "NHL Green," the league launched a campaign that encouraged fans to help build

environmentally-sustainable communities through hockey. It continued to publish its annual report highlighting its commitment to environmental sustainability and the success of the many initiatives. In 2021, the league launched its NHL Green's Water Restoration Program. With this initiative, the league committed to investing in water improvement projects in the two host cities of the Stanley Cup finalists that year (i.e., Montreal and Tampa Bay). This program also focused on effective water stewardship and helped promote clean water access to underserved communities (NHL Green, n.d.).

Some of the United States-based National Hockey League (NHL) teams are doing excellent work in this area. For example, the Seattle Kraken team joined the NHL in 2021 and quickly introduced a number of environmental protection programs and policies at their home facility, ironically named the Climate Pledge Arena. This facility is one of the world's most sustainable sports facilities (Prusina, 2022). One it's most unique features is its 'rain to rink' method for creating ice. Operators capture rainwater from their roof top and use it to make the ice that the players skate on. This process is testimony to the innovation and creativity that the team and facility operators have for environmental sustainability. Since the 'Rain to Rink' idea recycles more than 500,000 liters of rainwater (Prusina, 2022) that would normally be drawn from existing water sources.

The facility and team also engage in many other sustainability initiatives that are scalable to other teams. For example, the arena is powered by renewable electricity sources captured by on-site solar panels. The number of parking spaces at the facility is limited to facilitate more fans using public transit to attend games. Each Kraken game ticket includes free public transportation. Twenty-five percent of fans use public transportation to attend games, and this number is expected to rise as consumers grow more accustomed to the benefits and savings of using public transit. The Kraken are the first NHL team, and the third arena in North America to provide free ground transportation with their ticket.

Climate Pledge Arena and the team leaders believe that green-only operations also make the experience better. Their commitment to environmental sustainability is the centrepiece of their CSR/CER programs, and it demonstrates how much they care about preserving the environment (Barrett et al., 2019). Furthermore, the arena exclusively uses sustainable packaging in concessions, and they have banned single-use plastics in the building. Climate Pledge Arena generates 4,000 pounds of waste during each game or event (Shepherd, 2022). Officials have found a way to successfully recycle and compost this waste and divert 95 percent of this waste from landfill sites (Prusina, 2022).

Another organization doing impressive work in the environmental preservation area is the Los Angeles Kings and their home facility, Crypto.com Arena. The team has launched the "LA Kings Green," with the sole purpose of addressing climate change and reducing the environmental footprint of the team and the facility The "LA Kings Green" program tackles climate change in three main areas, specifically (a) arena and team operations; (b) community integration, and; (c) fan engagement. Crypto.com Arena has also banned the use of plastic straws, installed waterless urinals, and upgraded to LED sports lighting throughout the facility (Green – Kings care, n.d.). The arena has 1,727 solar panels of 346kW on

its roof, which are also connected to an additional solar panel system on the Microsoft Theatre roof. Over the next 25 years, renewable energy source will eliminate over 10,000 tons of CO2, reduce more than 27 tons of sulphur dioxide, and will reduce nitrous oxide levels by 33 tons (Environmental Sustainability, n.d.). The energy benefits are equivalent to the planting of mature trees across 170 acres of land (Environmental Sustainability, n.d.), and due to the efficiencies, the Crypto.com Arena will realize energy cost savings $280,000 annually (Environmental sustainability, n.d.). Ther "LA Kings Green" program encourages citizens to engage in environmental preservation discussions and practices. Program leaders have invested over 350 service hours discussing the merits of sustainable projects, and 4,000 students were given access to organic gardens in community schools. Additionally, $27,500 was gifted to local green organizations, and 1,100 youth eco leaders were empowered to spearhead waste reduction and water conservation projects (Green – Kings care, n.d.). Fans are encouraged to use public transportation or ride-share programs to come to the arena and bike racks were installed to facilitate fans using that mode of transportation. Before each game, the arena staff collects e-waste (e.g., batteries and cellphones) and hosts a clothes recycling program. Used hockey equipment is also collected and recycled and recycling bins are strategically positioned around the arena.

The LA Kings and Crypto.com Arena have advanced their environmental sustainability efforts. This information is publicly promoted and celebrated as part of their CSR strategy, and more specifically, their CER program (Barrett et al., 2019; Inoue & Kent, 2014; Trendafilova et al., 2013). However, what are the Canadian teams in the NHL doing in this critical area?

Research Question

Given the heightened attention that environmental sustainability has in society and the importance of corporate social responsibility to organizational success (Gallardo-Vazquez, 2014; Porter & Kramer, 2006; Snider et al., 2003), the researchers set out to answer the following research question:

1. What programs and practices do the seven Canadian National Hockey League (NHL) teams (i.e., Calgary Flames, Edmonton Oilers, Montreal Canadiens, Ottawa Senators, Toronto Maple Leafs, Vancouver Canucks, and the Winnipeg Jets) employ to demonstrate their commitment to environmental sustainability?

The researchers reviewed the teams' print and electronic documents and assessed their efficacy in minimizing their environmental impact. Finally, the researchers provided suggestions for improvement based on the environmental programs, practices, and services employed by teams based in other leagues and countries. The following subsections highlight the programs and initiatives of each team and offers an assessment of their progress in this critical area.

Calgary Flames

The Calgary Flames entered the NHL for the 1980-81 season following their relocation from Atlanta. They currently operate out of the city of Calgary in the Province of Alberta. The province is known for fossil fuel energy production, so efforts to reduce its dependence on fossil fuels have been predictably low. Approximately "89% of electricity in Alberta is produced from fossil fuels" (Canada Energy Regulator, 2022). As a result, the Flames have done relatively little to reduce its carbon footprint and demonstrate a commitment to environmental sustainability. The Flames are currently in negotiations with the City and Province on the possible construction of a new facility. In April of 2023, an agreement was made between the city, province and the Calgary Sports and Entertainment Corporation (CSEC) to build the new center. Construction will soon start on an 18,300 seat arena and entertainment venue replacing their current stadium, the Saddledome. The Saddledome has been home to the Flames for the last 39 years and is currently the second-oldest NHL arena after New York's Madison Square Garden (Calgary Recruits, 2022). Officials make reference to a number of environmentally-friendly features in the new facility (e.g., silver LEED certification, solar panels would allow the facility to be carbon neutral by 2035), and while impressive, the cost of these features have been sticky points in previous negotiations.

The Saddledome was built for the 1988 Winter Olympic Games and lacks the technology and amenities of modern facilities. The fact that the city of Edmonton has a bright, new, and modern facility is problematic for citizens of the city to its south. The saddle design of the roof, while creative, impacts the sight lines and the facility's ability to host large concerts and other revenue-generating events that would also enrich the entertainment options for the region's citizens. Building the new arena would be exactly what the city of Calgary needs to become a leader in sustainability since the Flames have been lacking in that area for quite some time. However, building one that is environmentally responsible is essential.

The team has implemented a few environmental initiatives. In 2012, the Flames and Saddledome implemented new practices to be more environmentally sensitive. Before these initiatives, the Flames were being investigated for their inappropriate environmental practices. For example, a CBC report in 2010 shamed the Flames organization for generating excessive waste (Urbani, 2012). The team and facility were cited for using too many single-use plastic cups and straws at their games that were subsequently transported to landfills. Recycling did not happen, a claim that the Flames leaders did not discount, but rather, blamed the city for its lack of recycling facilities.

In 2011, they successfully launched a "Go Green" program linked to the city's updated recycling facilities. This program called for the Saddledome to replace single-use plastic cups with biodegradable cups. Sixty recycling bins were also installed in the arena so fans could properly dispose of biodegradable containers and have them appropriately managed (Urbani, 2012). With this initiative, they empowered fans to be the change agent for redirecting unnecessary waste away from landfills.

The organization also installed energy-efficient LED lights in different parts of the arena. In addition, they partnered with RONA, a Canadian retailer of home improvement and construction products, to refurbish a community rink with LED lights to reduce energy consumption (Urbani, 2012). They promoted this development with the hopes that other communities would adopt the practice. The Flames continued their sustainability efforts in March of 2018 during the NHL' Green Month. The Flames had a "Green Game" which they announced on social media that they were proud to support a variety of sustainability initiatives at the Scotiabank Saddledome.

Overall, the Flames have not been a leading organization in this area. They have tried a few things, but their efforts pale in comparison to the activities undertaken by their sister teams in the NHL, including others in Canada.

Edmonton Oilers

The Edmonton Oilers joined the National Hockey League in 1979 as part of a merger between the World Hockey Association (WHA) and the NHL. Although both teams reside in the Province of Alberta, it is clear that their commitment to environmental sustainability is quite different from the Calgary Flames. Their facility, named Rogers Place, was built in 2014 and has been celebrated for its commitment to environmental sustainability. In 2017, the arena received a citation from the Green Sports Alliance for the organization's commitment to sustainability. Rogers Place was built in 2014 and was applauded for being the first LEED silver-certified NHL facility in Canada. The state-of-the-art facility acted as a catalyst for the city's downtown core. People were drawn to the geographic location of the facility, which is easily assessable via public transit. It revitalized a dilapidated region of the city and has served as a beacon for future growth and expansion of the region (Spohn, 2016).

Rogers Place demonstrated a commitment to the environment from its conceptual stages of development. During the construction phase until the time it opened, 94.8 percent of waste produced at the facility was diverted from landfills. This equates to over 3,469 tons of waste that have not ended up in landfill sites and polluted the land and water systems of the city (Spohn, 2016). Aside from waste reduction, Rogers Place has implemented plans and processes for other environmentally sustainable initiatives, including, but not limited to, development density, water reduction, transportation, and energy efficiency.

The fact that Rogers Place was the first LEED silver-certified NHL facility in Canada is an achievement to be proud of, but also one that took advantage of the community support to build the facility with the emerging technologies of the time. In doing so, they demonstrated incredible foresight and leadership. The Green Sports Alliance acknowledged this point and suggested that Rogers Place and its LEED-Silver certification was an environmental leader among North American teams and sports facilities (Spohn, 2016).

Becoming a LEED silver-certified arena costs more initially and adds a number of complexities to an already complex facility. Many factors need to be considered when designing a facility with new technologies like those contained in

Rogers Place. As previously mentioned, the arena has diverted almost 95 percent of its waste from landfills. The importance here is not only in reducing waste but rather recycling and/or repurposing materials which Rogers Place has successfully considered and carried out. Not sending waste to landfills ends up reducing the environmental issues that are linked with waste, such as carbon emissions and pollution (Spohn, 2016). This recognition is a true sign that the building is of a green design. Additionally, Roger Place's green design optimizes energy performance and reduces its carbon footprint.

Rogers Place is also the centerpiece of a larger civic plan. Since it was built in Edmonton's downtown core, the facility it is strategically connected to public transit, therefore, taking vehicles off the road and making it a safe and walkable space for patrons. Furthermore, Rogers Place is connected to the community through seven Light Rail Transit (LRT) stops that can be accessed within walking distance. It also has effective pedestrian connections as well as electric car charging stations in the arena's parking garage. All of this is due to the fact that Rogers Place was constructed as a compact and dense development (Spohn, 2016).

As an effort to become more energy efficient, Rogers Place has large-scale energy modelling in place to lower its overall energy consumption. As mentioned previously, the building design reduces the carbon footprint as the arena has heat recovery ventilation and central heating control (Spohn, 2016). Not only is the arena meeting the requirements for Edmonton's sustainability policy and LEED, but they are going above and beyond. On top of their heat ventilation and central control, they also have a highly insulated building envelope (i.e., the physical separator between the internal building and exterior environment). Finally, Rogers Place reduces its water use by having low-flow plumbing installation and toilets in every washroom throughout the arena. This design minimizes their water usage by up to 35 percent (Spohn, 2016).

Climate change poses a big challenge for the sports industry, but that does not necessarily mean that you must do one big thing to solve it. It is more a collection of small yet effective efforts that will ultimately lead to change. That is exactly what is happening at Rogers Place. They have done a lot of small but impactful modifications to their building design that has led to big environmental impacts. Rogers Place has focused on conserving water, energy efficiency, temperature control, landscaping, and reducing its carbon footprint. Altogether, leading to great benefits and being a leader in sustainability. These sustainable changes also align with one of their key pillars: environmental excellence. Being that it is located in an "energy-producing province," it is also a key pillar for its partner, the city of Edmonton (Spohn, 2016). Rogers Place is both a beautiful design and environmentally efficient, which will be something the city will appreciate in the future.

Aside from Rogers Place being a cutting-edge, environmentally sustainable building, the Oilers themselves have not engaged in green initiatives or social marketing campaigns to promote environmental sustainability. Perhaps they feel that the Roger's Place initiatives are team activities, and they have done all they can and should do in this area. However, in the opinion of these researchers, they could celebrate the advancements a bit more, and engage in a social marketing

program that celebrates their achievements in the CER area, helps patrons understand other ways of reducing their carbon footprint and contributions to landfills, and appreciate the need for everyone to be environmentally sensitive. Perhaps their position in Alberta explains this reticence, but given the success of Rogers Place, these researchers believe that there is room for the team to also be active in this important area, and they have the perfect platform to use to launch their program. The arena has made a substantial impact. However, it is also important for the team to assume a leadership role in promoting and engaging in environmentally sustainable initiatives.

Montreal Canadiens

The Montreal Canadiens is the oldest team in the National Hockey League. Founded in 1909, the team joined the NHL in 1917 and has been a fixture in the league ever since. The team has won a record 24 Stanley Cup trophies. Since 1996, the team has played out of the Bell Centre, which is located in downtown Montreal in the Province of Quebec. A review of team documents confirms that the team has been making efforts to be more environmentally sustainable since May of 2007. During that time, the Canadiens launched the program "Goal is Green!" which had the objective of positioning the club as a leader in terms of environmental management and sustainable development among all professional sports franchises (The goal is green!, n.d.). The Canadiens green initiatives can be partitioned into four main categories: Biodegradation, Composting and Recycling, Energy Saving, and Transportation (The goal is green!, n.d.). Over time, the team has undertaken a number of programs that demonstrate its commitment to positive environmental change.

In 2007, the Canadiens announced that they would only use biodegradable products over and eliminate the use of single-use plastic containers and packaging. The Bell Centre collaborates with partners that produce biodegradable products such as kitchen tableware and cleaning solutions. Today, the Bell Centre proudly proclaims that the facility uses 95% biodegradable utensils, glasses, and plates (Biodegradation-The goal is green!, n.d.). Using biodegradable products also does not release any gases or chemicals into the air when they are decomposing, which in turn helps reduce the facility's carbon footprint. The facility leaders' efforts extend beyond the use of plastic utensils, glasses, and plates. They also employed a different type of plastic in their beer glasses. The plastic they use decomposes in three months, compared to the 1,000 years required to decompose traditional plastic material (Biodegradation – The goal is green!, n.d.). The Bell Centre also prohibited the use of Styrofoam containers.

The Bell Centre leadership publicly claimed to make composting and recycling a priority, and they have clearly followed through on this ambition. One year after they launched their "Goal is Green!" program, the Bell Centre was awarded and has maintained recycling certification from the Recyc-Québec (Composting and recycling – The goal is green!, n.d.). The facility earned other awards and citations for its commitment to conservation and the environment. In 2012, it received a "silver" level LEED certification for its environmental practices.

Bell Centre was applauded for composting and recycling over 80% of unused materials. This number is impressive, considering the facility once reported that it recycled 25% of its materials prior to the arena implementing its green program. In addition to tripling its performance in recycling, Bell Centre also decreased the amount of garbage it produced by 78% since starting the green program in 2007. The Bell Centre has undertaken other recycling efforts that warrant mention. For example, they donated used computer equipment, restored, and used 90% of old stadium seat materials in the construction of their new seats, donated 35 tons of food (in one year) to people in need rather than a landfill, and installed 945 three-tiered recycling bins throughout the building (Composting and recycling – The goal is green!, n.d.).

It is important to note that the Canadiens environmental initiatives extend beyond the arena. In May of 2017, an NHL Green Equipment Drive took place at the Bell Sports Complex, where the public was asked to donate used hockey equipment. The Canadiens staff collected, cleaned, and then distributed the used equipment to a number of community rinks. The Canadiens also continue their "Twigs for Twigs" initiative every year since it became a part of their "Goal is Green!" program. This initiative focuses on promoting reforestation in different areas of Montreal where there is a need for trees, especially those located in abandoned agricultural areas near lakes that were negatively impacted by cyanobacteria (Composting and recycling – The goal is green!, n.d.). Their commitment to reforestation is evidenced by another program. Since 2013, the Canadiens organization has planted a tree for every hockey stick broken by one of its players.

After receiving their recycling certification, the Canadiens officials quickly looked into LEED certification. They wanted to determine how they could maximize their main systems and lead in energy saving. Only four months after registering the Bell Centre, they were awarded the LEED certifications for Existing Buildings (US) and the LEED Canada for Existing Buildings: Operation and maintenance by the Canada Green Building Council (Energy saving – The goal is green!, n.d.). However, it could not have happened without the commitment, determination, and teamwork demonstrated by the organization and its employees. A few of the measures the Bell Centre took to meet some 50 actions required to earn the LEED certification included: installing more water-efficient toilets and faucets in the facility that significantly reduced water consumption; managing cooling towers to heighten efficiency; installing an automated control system to reduce energy demands; reducing energy consumption (i.e., lighting) by 65% because of new LED usage; realizing a 28% reduction in greenhouse gas emissions; employing a daily automized temperature and ventilation systems to be more efficient, and; becoming 65% more efficient in energy saving by installing 140 LED lamps to light the ice (Energy saving – The goal is green!, n.d.).

The Canadiens organization also introduced the "Goal is Green!" program to ensure more environmentally conscious transportation systems for their fans (Transportation – The goal is green!, n.d.). They put in place a social media program encouraging fans to use public transit to reduce their carbon footprint. They entered a long-term partnership with STM (i.e., Société de transport de

Montréal) that made this transportation service effective and cost-efficient for fans. During games, the public address announcer encourages fans to take accessible public transportation and use the convenient metro stations located adjacent to the Bell Centre. Officials noted that there was a noticeable increase in metro service during home game nights. The facility planners installed charging stations in their underground parking structure in prime parking spaces to support fans driving electrical cars. With transportation, the Canadiens push the usage of public transportation for fans. Putting into practice what they preach, they encouraged their staff to carpool, walk, or use public transit (Transportation – The goal is green!, n.d.).

All of these environmental actions and innovations appear to have had positive impacts on the fans, and the accompanying social media campaign appeared to heighten their awareness of the importance of environmental sustainability (Environmental Innovator Winner, 2017). Their programs and activities demonstrated an authentic commitment to environmental sustainability. Furthermore, it aligned with the league initiatives in the area and fortified the Canadiens' position as a leading NHL team in the sustainability movement. Overall, these sustainable initiatives implemented by the Canadiens and the Bell Centre are powerful programs that demonstrate their commitment to the environment and its sustainability (Environmental Innovator Winner, 2017).

Ottawa Senators

The Ottawa Senators rejoined the NHL in 1992. Many of their sustainable efforts appear to have been initiated in 2012. The Senators organization partnered with NHL Green to conduct a full-scale energy audit of the Canadian Tire Centre, the home of the hockey team since 1996 and previously known as Scotiabank Place. This energy audit, launched during the year that the Senators hosted the All-Star Game and weekend, was used to identify potential areas and operations that would heighten energy efficiency, reduce energy and maintenance costs, and significantly reduce facility impact on the environment (NHL Green and Ottawa, 2012). Hydro Ottawa Limited and Enbridge Gas Distribution partnered with the Senators on this audit, which led to the facility developing policies and practices that team officials believed would be the best and most sustainable energy management strategies for the facility (NHL Green and Ottawa, 2012). Unfortunately, the results of this audit were never publicly released.

The Senators did engage in a number of green programs like the "Think Green, Go Red" campaign that was designed to tackle environmental concerns, predominantly through educating fans and employees to be more environmentally aware and sensitive. Since starting this campaign, the Canadian Tire Centre has reported that it has increased recycling rates, switched to more ecologically responsible cleaning products, and altered practices to minimize unnecessary lighting (NHL Green and Ottawa, 2012).

In 2017, the Senators announced a multi-year partnership with Tomlinson Environmental Services, an Ottawa-based business and community leader. With this partnership, Tomlinson Environmental Services became the official

"Environmental Services Partner" for both the Senators and Canadian Tire Centre (Sens Communications, 2017). Tomlinson provided environmental services to the infrastructure of the Canadian Tire Centre, which included managing all waste and providing recycling services. This partnership benefitted the Senators and helped the organization become more sustainable.

Other than the Senators conducting an energy audit, establishing an environmental campaign, and partnering with Tomlinson Environmental Services, there has not been any other environmental initiatives reported. It is great that the Senators and Canadian Tire Centre have done something to become more environmentally sustainable, but they have not been as active as some of the other teams in changing their practices or encouraging their fans to be more environmentally sensitive. When looking at some of the other Canadian NHL teams, the Senators fall behind. They could be doing a lot more or at least showcasing their sustainability efforts in a more impactful way, like having a green initiatives section on their website that highlights some of their environmental accomplishments. As well, the arena is located miles from the city center and is not accessible through the mass public transit systems like the light-rail systems used in other cities to service their fans. Most of their fans travel to the arena for games and events in private vehicles. Talks are underway for the development of a new arena in the city center. This facility should have all of the energy-efficient amenities. As well, its location will facilitate access through more environmentally-friendly modes. However, the Senators and their venue operators could be doing more in their current venue and will need to be active in this area in the future, given the importance of CSR to long-term organizational success.

Toronto Maple Leafs

The Toronto franchise first entered the NHL in 1917 as the Toronto Arenas. They were renamed as the Toronto St. Patrick's in 1919, and in 1927 was renamed a third and final time as the Toronto Maple Leafs. The Toronto Maple Leafs are the signature sports franchise in the Maple Leaf Sports and Entertainment (MLSE) Inc. organization. Other professional teams that fall under the MLSE umbrella include the Toronto Raptors of the National Basketball Association, the Toronto Argonauts of the Canadian Football League, the Toronto FC of Major League Soccer, the Toronto Marlies of the American Hockey League, and the developmental Raptors 905 (basketball) and Toronto FC II (soccer) program.

As an organization, MLSE has demonstrated an ongoing commitment to environmental sustainability for years. As part of this, the Toronto Maple Leafs, Scotiabank Arena (formerly known as the Air Canada Centre) where the Leafs and Raptors play, and the David Suzuki Foundation partnered to spotlight the Maple Leafs "Go Green" campaign for one of their home games in the 2008-09 season. The vice-president of venues and entertainment for MLSE stated at the time that this would help raise awareness about the importance of moving towards a more sustainable society and that it is only one way MLSE was promoting its ongoing commitment to decrease the environmental impact of the venue and teams (Maple Leafs and Air Canada Centre Go Green, 2009). A few of the green actions that

took place during that game included lighting reduction on the concourse level, in-arena messages informing fans on how they could lower their personal carbon footprint, a public service announcement from David Suzuki, and a 30% discount at CentreSports for the fans who provided proof of their use of public transit to the game. Additionally, prior to this game, the Leafs organization participated in Earth Hour by reducing lighting in the parking garage, concourses, and washrooms; dimming signage illumination and turning off the arena's iconic spotlights for the evening (Maple Leafs and Air Canada Centre Go Green, 2009). Unfortunately, this seemed to be a one-time event, and the researchers question why this does not happen for each game hosted by MLSE.

In March of 2018, the organization further demonstrated its commitment to environmental sustainability by teaming up with the NHL to advocate the "NHL Green Awareness Month". Again, it was celebrated and enacted for one game during the month. This game included various promotions and activities designed to draw attention to excessive consumption and waste. In addition, Maple Leafs Sport and Entertainment (MLSE) matched 100% of the electricity used during all Maple Leafs, Raptors and Toronto FC games at Air Canada Centre and BMO Field that month with Renewable Energy Credits supporting Canadian renewable energy projects. (NHL Green: Toronto Maple Leafs, n.d.). Later that month, MLSE staff and alumni ambassadors took part in the first annual Johnny Bower Park Clean-Up. Johnny Bower, a beloved former player, dedicated his time to maintaining the cleanliness of the park and MLSE organization was proud to support the effort.

On the official NHL Green Game Day, the Leafs held a used hockey equipment drive at the Air Canada Centre and all of the equipment collected was donated to the 'MLSE Foundation's Hockey in the Neighborhood Program.' This program recycled the equipment and supported a community need ("NHL Green: Toronto Maple Leafs, n.d.). During the game, the team made several changes to its common game day practices to support the NHL Green Game Day event. The venue turned off the spotlights that were routinely used, dimmed external advertising signs, and reduced concourse lighting by 66%. The Leafs complemented these activities with scoreboard messages designed to educate fans on environmental practices put in place by MLSE and encouraged fans to adopt environmentally supportive practices (NHL Green: Toronto Maple Leafs , n.d.).

MLSE appears to be committed to being an environmental leader in the community. They have established a working committee devoted to studying ways to reduce their programs' environmental impact. MLSE officials uncovered three areas where it might have the greatest impact on the environment, namely: energy, waste, and water (Sustainability, n.d.). The most important component of MLSE's environmental footprint is energy consumption. MLSE officials promised to take its management seriously, and they appear to have followed through on that commitment. Some of the changes they implemented include using a deep-lake water cooling process, using centrally produced steam, implementing lighting and illumination controls, reducing building temperature levels when not in use, using lower speeds on fans and pumps where possible, using LED lighting, and

monitoring and strategically reducing its footprint wherever possible (Sustainability, n.d.).

MLSE officials also focused on waste management practices. Scotiabank Arena has 2.75 million people enter the building each year and organizes about 180 ticketed events annually. This is a substantial amount of traffic coming in and out of the arena, especially taking into consideration the amenities that an arena this size provides. Over time, one can imagine that there would be a considerable amount of waste accumulated from this volume of traffic. MLSE officials are well aware of the waste produced at the facility. MLSE needed to find alternatives to landfills. In 2019, they found a way to convert waste for other uses, and they subsequently transferred over 500 metric tons of organic material from landfills into clean soil that could be used in agriculture (Sustainability, n.d.). Additionally, MLSE reports that it is recycling about 375 metric tons of materials on an annual basis. A few of their accomplishments in this area include utilizing tri-sorters for separating organic foods and recyclables, utilizing recycled paper products, utilizing second-hand building materials and furniture, donating spare goods, collecting fryer oil and converting to biofuel, and moving towards using organic packaging (Sustainability, n.d.). The organization once led a campaign to collect used running shoes and recycle the rubber into synthetic floors used to refurbish elementary and secondary school gym floors.

The last component of MLSE's environmental sustainability plan is water usage. MLSE is consistently looking for new ways to reduce the amount of water they use and to make sure their organization does not contaminate the water system. They have accomplished this by using cleaning supplies that are environmentally friendly, installing faucet sensors, filtering water, and using anode technology to treat water (Sustainability, n.d.). On top of these three areas, MLSE takes it a step further and partners with Ocean Wise, a company that reshapes the seafood industry by influencing and educating others. At the time of this writing, they are the first and only professional sports arena/organization to be partnered with them. MLSE has made a promise to become a leader in the community with regard to protecting our environment, our oceans, and our future. They are the largest sports organization in the country, located in the largest city, and housed in the most active facility. It is critically important that MLSE has a robust environment sensitivity program. Perhaps the organization could be most boastful of its many activities and its commitment to preserving and healing the environment.

Vancouver Canucks

The Vancouver Canucks hockey team joined the NHL in 1970 when the league expanded by two teams. They began play in the Pacific Coliseum and moved to a new facility in 1995 (General Motors Place, later named the Rogers Arena). This facility and the adjoining BC Stadium are centrally located and well-served by light-rail systems to transfer spectators and patrons to and from the venue. Like the other Canadian franchises, the Canucks organization has been an

active partner in the NHL's environmental sensitivity programs and has launched some of its own initiatives as part of its CSR/CER strategy.

For example, in 2016, during the Green Sports Alliance Game Changer Awards, the Canucks Sports and Entertainment (CSE) and Rogers Arena were awarded the "Environmental Innovator of the Year" in the NHL category. This awards program acknowledges teams, venues, events, and universities for their contribution to advancing the green sports movement. As with many other live events facilities, the Rogers Arena has a powerful and complicated energy usage and consumption footprint. For this reason, the Canucks actively sought ways that they can build upon their existing green initiatives, reduce their waste and their carbon footprint, and implement new programs and innovations to lessen their environmental impact. Some of the Canucks green initiatives include, but are not limited to, the introduction of an automated Energy Optimization System (i.e., part of a partnership with Shift Energy), sharpening their focus on local products, becoming an owner of sustainable farms for salmon and sablefish, and make it an organizational goal of having zero waste (CSE Wins Sustainability Award, 2016). These were ambitious plans, but the Rogers Arena and CSE were committed as demonstrated by the fact that they were one of the founding members of the Green Sports Alliance.

In 2013, CSE partnered with the Green Sports Alliance and Waste Management to assist them in reaching their goal of zero waste. One main way they planned on being successful in this quest was by using a number of tri-sorter recycling bins, which were strategically placed throughout Rogers Arena. CSE hoped this would call attention to their green initiative and make it easier for fans to assist them in reducing their environmental impact by filtering out what can be recycled, composted, or thrown out as waste (Zero Waste Program, n.d.). Furthermore, all containers, spoons, knives, and straws that the Rogers Arena concourse provided were made of biodegradable materials. In 2019, with this initiative firmly in place, the CSE organization recycled or composted 85% of the waste that would previously be sent to landfills (Zero Waste Program, n.d.). It is clear to these researchers that CSE and the Rogers Arena are 100% committed to environmental sustainability and have implemented policies and practices to operationalize their commitment to the environment. In fact, they are a national leader in this critical area.

Winnipeg Jets

The Winnipeg Jets entered the NHL in the 1979 merger with the WHA. They joined the league along with the Edmonton Oilers, the Quebec Nordiques (now the Colorado Avalanche) and the New England Whalers (now the Caroline Hurricane). The original Winnipeg Jets team relocated to Phoenix, Arizona (now the Arizona Coyotes) in 1979, and the current Winnipeg Jets franchise relocated from Atlanta, Georgia, in 2011. The team is owned by True North Sports and Entertainment, and the team plays its home games in the Canada Life Centre (formerly the Bell MTS Place).

The Winnipeg Jets and True North Sports and Entertainment (TNSE) strive to be a leader in the community and are committed to reducing their environmental impact. The Jets have worked hard to improve their environmental footprint for both their sports facilities and operations. Their primary focus is on implementing recycling, waste management, energy efficiency, and water conservation programs. Over the years, the Jets have implemented a number of measures to be leaders in these important areas. For example, Canada Life Centre proudly boasted that in 2021 alone, their staff members recycled enough paper and cardboard to save 750 trees (Go Green, n.d.). Since 2011, the facility has saved over 5,000 trees through an aggressive recycling program for both paper and cardboard. Officials at the arena claim to recycle roughly 100 pounds per day (Go Green, n.d.). Furthermore, since their relocation to Winnipeg in 2011, the Jets officials report that they have recycled 156 tons of plastic (Go Green, n.d.)

On the waste management side of the equation, the Canada Life Centre has transferred 246,000 litres of oil from going to waste since 2018 (Green Initiatives, 2022). Every week about 1,000 pounds of kitchen scraps and coffee grinds are composted. Furthermore, the used cooking oils are recycled into biodiesel fuels to power farm vehicles in Manitoba. The Jets stayed true to their pledge to reduce their environmental impact. They reported that they have redirected more than 3.5 million kilograms of waste from landfills ever since 2004 (Green Initiatives, 2022).

Canada Life Centre uses almost exclusively LED lighting both inside and outside the arena. Using this lighting provides energy-savings, cost-savings, lower CO2 emissions, and operates on a low-voltage platform. Furthermore, Canada Life Centre uses the latest sports lighting technology known as Eaton Ephesus LED lighting around the arena bowl and in the concourse areas (Green Initiatives, 2022). The concourse lighting can be dimmed or shut off individually with motion sensors to help conserve energy. The Canada Life Centre has sought to minimize its need for artificial light with the help of the arena's glass façade which is ergonomically designed to allow natural light in. There are many ways the Jets and Canada Life Centre have successfully reduced their energy consumption. Leaders encourage all employees to ride their bikes to work. This campaign has worked, and the organization believes that the campaign has generated considerable savings in CO2 emissions (Go Green, n.d.). Lastly, the Canada Life Centre reports that it conserved 1.75 million litres of water in 2021 with the help of the recycling program.

Aside from the four efforts that TNSE company is focusing on, there are several environmentally conscious operations that they have taken part in which are noteworthy. From the beginning, and since Canada Life Centre was being built, concrete and steel studs with drywall were used in place of wood, and recycled materials were used as a surface finish (Go Green, n.d.). The Canada Life Centre supplies hand towels and toilet paper that are made of recycled materials. TNSE is proud to acknowledge that they use an eco-friendly paper supplier that plants two trees for every tree that is cut down (Green Initiatives, 2022). TNSE and Canada Life Centre ensure that they exclusively use only eco-friendly and Certified Green products in their facilities. They truly make an effort to purchase

the most environmentally- sustainable materials to be used in their operations and in building upgrades/construction.

The Winnipeg Jets and the Canada Life Centre are proud members of the Green Sports Alliance. As members, they work in collaboration to identify the essential tools needed to make knowledgeable and sustainable choices. In turn, these should benefit their venue, fans, and environment. The Canada Life Centre and the Jets organization can be proud of the various environmental protection programs that they have effectively implemented. These programs range from energy efficiency practices to waste reduction and recycling programs and to lower their carbon footprint. An important green initiative took place in March of 2019 and warrants special mention. Similar to the Leafs, the Jets also took part in a "Go Green" game night. Part of that night, the Jets hosted Climate Change Connection and Green Action Centre on the Canada Life Centre concourse. The organizations promoted ways for fans to become more environmentally friendly while providing information to them on how they can do so. The NHL's environmental mission strives to identify areas where the league can reduce its environmental footprint and be leaders in helping other organizations and citizens adopt sustainability practices (Winnipeg Jets PR, 2019). The Jets "Go Green" night promoted the many ways that TNSE, Canada Life Centre, and the Jets organization are addressing the need for environmental sensitivity and preservation and offering programs and services for their fans to join them in these preservation efforts (Winnipeg Jets PR, 2019).

A Look Ahead

The seven Canadian NHL teams have all made some kind of effort to become more environmentally sustainable. However, it is clear that some teams and their respective arenas are making more of an effort than others. Those teams that are lacking in their sustainable efforts can and should look at the teams that are leading in sustainability. That being said, the researchers suggest that it is important to look at the practices of the Seattle Kraken and the Los Angeles Kings as they have best practices that should be adopted are very active in this area. While organizational leaders of the Canadian teams and facilities appear to be committed to protecting the environment and making their operations more sustainable, there is substantial room for growth.

As a result of global warming, there is a growing concern about protecting and care for the environment and its wildlife. Therefore, environmental sustainability and corporate responsibility are topics of high interest in research, businesses, news, and in everyday discussions. There is a call for action to become more environmentally sustainable by promoting change and engaging in environmental initiatives. It is one thing to claim you are being environmentally sustainable, and it is another to act on it. Many organizations and businesses already have corporate environmental responsibility acts in place. Although not all acts are perfect, there is some kind of change being seen in these companies. The concern for the environment is growing every day which means that the topics of

environmental sustainability and corporate responsibility in sports will be continually looked at.

Environmental sustainability and corporate social responsibility are not only in general businesses, but it is also heavily acknowledged in the world of sports. Sports leagues, teams, and stadiums are all taking part in their role to become leaders in sustainability. The sports world has and can have an immense impact on society. Given this, it is crucial for leagues, teams, and their respective stadiums to make it known to their consumers that they are taking an active role in being environmentally sustainable while also showcasing how they are accomplishing this end. Actions speak louder than words. When consumers see that the team and facility actions are aligned, the organization becomes more credible, and there is a higher chance that consumers will do their part in making a change.

The NHL and its seven Canadian teams are taking measures to become environmental leaders in their respective communities. Some terms are doing quite a bit, and others are not doing very much. The league itself has launched a league-wide green initiative to encourage sustainable practices and raise awareness of environmental concerns. Furthermore, many teams have joined the Green Sports Alliance showing their commitment to making a positive change toward a more sustainable future. Only 12 years ago, the Green Sports Alliance was created and founded by Paul G. Allen's Vulcan Inc. and the Natural Resources Defense Council (Playing for the Next Generation, n.d.). Given that it is a relatively new initiative, it is fair to state that it has already made a substantial impact on the sports world. The researchers predict that the area will only grow more with time resulting in sports leagues, teams, and venues transforming their operations and becoming entirely sustainable. More leagues, teams, and venues are trying to become more sustainable in their operations, however, there is still considerable work to do in this area. Some teams and facilities are clearly making more progress than others. Climate change is ever prominent, and there is a great push for environmental sustainability, so without a doubt, those lacking in change will have to conform in the future. Environmental sustainability is an ongoing process and will be for a very long time. That means that organizations need to keep improving, and they can do this by adapting to new sustainable trends. Since there continue to be new ways of becoming more environmentally sustainable and friendly, there is always something an organization can improve on. Whether it's reducing energy and water usage, technology changes, waste diversion, or designing/modifying a stadium that is LEED certified, there can always be an improvement made. In the future, these advances will continue, and more will arise. An advancement that I think will be big in sports organizations is net-zero emissions. There has already been some change with net-zero emissions, but not nearly enough. One example in sport is the Formula 1 (F1) motorsport series. The F1 circuit has pledged to be carbon neutral by 2030 (Koons, 2022). This is, of course, significant as it is a sport that uses combustion engine cars.

The findings of this research are crucial for the practice of sport management, theory, and subsequent research. Since there are rising concerns of the significant impact organizations have on the environment, there is a need for this kind of research. Sports organizations specifically have just as big of an impact on the

environment, if not bigger, but also hold the power to influence the masses if they become a leader in sustainability. So, it is important for research to be done on what sports leagues and teams are doing to be more environmentally sustainable.

Teams and venue officials need to ask if they have sustainable environmental practices in place. Could they be doing more? Are they actively participating in sustainable practices? What are their future goals and plans for sustainability? After analyzing what kind of an impact these sports organizations are having on the environment and sustainability, there can then be suggestions and improvements for them as to what they could be doing better. Each team should have robust recycling programs in their venues. They should also adopt some of the best recycling practices (e.g., recycling clothes and used hockey equipment). Naturally, single-use plastic must go and recycle bins must be installed throughout the facility. Teams would be well served in making in-game announcements about environmental preservation and the practices and commitments team and facility official are making to reduce their environmental impact. The new facilities being discussed in Ottawa and Calgary must consider all of the latest developments in environmental sustainability (i.e., design, materials, operations, energy consumption, and accessibility through public transit and other energy-sensitive modes). Best practices must be implemented, expressed, and celebrated. After all, CSR is good for business (Porter & Kramer, 2006), and in the view of the authors of this paper, nothing is more important or relevant to members of Canadian society than protecting the environment.

Conclusion

The researchers analyzed the environmental sustainability practices in the NHL with specific attention given to the programs and practices employed by the seven Canadian teams. As global warming and climate change catastrophes increase, there is a call for organizations to take action and implement changes to become more environmentally sustainable. Sports organizations are becoming more mindful of this and are making a conscious effort to focus on the environment and develop sustainable practices. This could be done by recycling, reducing water and waste, conserving energy, and obtaining a Leadership in Energy and Environmental Design (LEED) certification. However, it is not only limited to those as there are dozens of other sustainable practices to take part in. The league and all seven teams have taken various actions to go green and become more environmentally sustainable, though some teams have done more than others. When it comes to sustainability, there is always room for improvement. Therefore, changes and improvements to their sustainability strategies need to be made for a more sustainable future.

It was also important to look at two American NHL teams and their environmentally sustainable efforts. The Seattle Kraken/Climate Pledge Arena and the LA Kings/Crypto.com Arena were both analyzed for their efforts to be more sustainable. Both exemplified an outstanding number and variety of green initiatives. Climate Pledge Arena is one of the world's most sustainable facilities

with being carbon-neutral, committing to water conservation with its "Rain to Rink" method, producing zero waste with its waste diversion system, and providing free public transport to the home Kraken games. On the other hand, Crypto.com Arena has developed best practices so it can operate in the most environmentally conscious manner (Environmental Sustainability, n.d.). Some of these notable practices include renewable energy through the use of solar panels, installing an LED sports lighting system to save energy costs, making it possible for the community to participate in green initiatives, and encouraging recycling and the use of public transportation. These are just some of the sustainable initiatives they took part in. Analyzing these two American NHL teams is for the purpose of comparing their environmentally sustainable efforts to the Canadian NHL teams. This way, one can see what teams and facility operators are doing differently and what the Canadian teams can adopt to their sustainable programs. Although all teams appear to be committed to protecting the environment, there are so many ways in which each team and arena can improve.

Being a leader in environmental sustainability is a continuous process. Global warming and climate change are ever-present and increasing at an alarming rate. It is important that the sports industry makes a conscious and powerful effort to be the change and lead the community to do so as well.

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