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Linking Sport Simulation Games to Real-World Sport Consumption: The Role of Passion and Sport Enjoyment

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Abstract

This study examines the potential of utilizing sport simulation games in promoting real-world sport consumption. Drawing on diversification theory, we examine whether psychological experiences (arousal, belonging, achievement) in simulated sport play leads to sport enjoyment and subsequently increases sport consumption intentions (participating, spectating, media viewing); passion-type (harmonious vs. obsessive) is set as a boundary condition based on the dualistic model of passion. Using online survey data from 431 US/Canadian adults who regularly play sport simulation games, multi-group SEM was conducted. In harmonious group, arousal and belonging were positively linked to all three intention-types through sport enjoyment, supporting a positive relation (i.e., synergy) between gaming and sport. In obsessive group, arousal and achievement were positively linked to sport media viewing intention through sport enjoyment, but a stronger negative link between achievement and sport participation intention was also observed, indicating an overall negative relation (i.e., competing). Theoretical and practical implications are discussed.

Keywords: arousal, belonging, enjoyment, passion, simulation

The gaming industry has proliferated, globally reaching \$182.5 billion revenue in 2024 with a 2.8% compound annual growth rate between 2022 and 2025 (Newzoo, 2025). Major contributors to such growth are the expansion and maturation of eSport competitions (Newzoo, 2025), the continuous popularity of video gaming (where the market size doubled between 2017 and 2022; Reed, 2022), and its relatively younger fan base coming of age to emerge as major consumers with purchasing power (38% of fans are ages 16–24 and 73% are under 35; Boston Consulting Group [BCG], 2023).

Sport organizations (e.g., FIFA, IOC, NBA, MLS) are searching for ways to capitalize on gaming's growth and popularity in promoting real-world sport consumption (i.e., participating, spectating, media viewing), pursuing a synergistic relation between gaming and sport. However, widespread concerns of gaming going against sport for leisure time (see Chan et al., 2021, and Drape, 2021) suggest a competing relation. Strategies should be developed to facilitate synergy and mitigate competition. For this, knowledge of the process and factors shaping the relation between gaming and sport is essential.

Sport Simulation and Real-World Sport

One area with perhaps the most potential for synergy is sport simulation games (e.g., EA Sport FC, NBA2K, Madden, MLB: the Show), which take up the highest proportion (23%) of console game revenue (Newzoo, 2025). Sport simulation games offer psychological experiences (e.g., mental stimulation, pleasure) associated with gaming, which are known to have “magnetic” motivational appeals (Kim et al., 2024). In doing so, one can experience sport in a way that is untraditional (e.g., audio, visual, kinesthetic) yet resembles (e.g., teams/players, rules, strategies) or even exceeds (e.g., manager/franchise modes offer options to play as general managers or team owners) real-world experiences in sport. Referring to the diversification theory (Lou, 2017), sport simulation games can diversify one's exposure to and processing of sport, enhancing enjoyment and understanding of sport. Such appreciation can stimulate interest in real-world sport consumption, deriving synergistic effects.

Psychological experiences in simulated sport play (e.g., fun, pride, belonging) enhance sport appreciation and transferring into real-world sport consumption seems logical, but empirical testing is limited. Studies on sport gaming's impact on sport participation tend to focus on virtual reality or exergames rather than simulation games. Examples of few exceptions are Adachi and Willoughby (2016; sport simulation play was linked to participation involvement over 3 years) and Schlimm et al. (2024; sport simulation game features such as sport context/love impacted sport participation). Several studies tested sport gaming motives (e.g., sport interest, player interest; Pizzo et al., 2018) and their association with spectatorship/viewership intentions. These studies supported the synergistic effects with limited contextual focus and hinted sport appreciation (related to sport context/love, sport interest) as its key mechanism. Exhaustively testing the synergy across sport participation, spectating, and media viewing and verifying the role of sport appreciation (e.g., enjoyment) in forming synergy can advance our knowledge.

Harmonious Versus Obsessive Passion

In gaming studies, gaming-intensity (casual vs. heavy) is frequently identified as a key determinant

for the relation (synergistic vs. competing) between gaming and other activities (Martončík, 2015). However, the factor's effect lacks exploration in sport simulation games. A useful indicator and framework for assessing gaming-intensity's effect comes from the dualistic model of passion (Pryzybylski et al., 2009); in the model, passion is a "strong inclination towards a self-defining activity that one likes, finds important, and invests time and energy" (Vallerand, 2016; p. 102). There are two types of passion. Harmonious passion lets one freely accept and engage in an activity based on his or her own will and controllable urge; such autonomy/control enables a "secured sense of self-esteem," deriving openness towards new experiences. Obsessive passion is when there is rigid persistence for an activity that comes from uncontrollable urge (e.g., excitement, social-/self-acceptance); such urge stems from the activity 'overpowering space in one's personal identity', resulting in loss of control over the activity and often conflicts with other activities (Vallerand, 2016). The two types of passion can offer a novel and more nuanced understanding of psychological experiences in sport simulation games and their synergistic or competing relation with real-world sport.

Research Purpose

This study examines the potential of utilizing sport simulation games in promoting real-world sport consumption. Psychological experiences (i.e., arousal, belonging, achievement) in simulated sport play are proposed to lead to enhanced sport appreciation (i.e., enjoyment), which enhancement will further boost intentions for sport consumption (i.e., participating, spectating, media viewing); passion-type is suggested as a boundary condition. The proposed relations will be tested based on online-survey data and multi-group SEM (harmonious vs. obsessive passion). Findings will offer novel insights with focus on sport appreciation/enjoyment and passion-type.

Methods

Participant and Data Collection

The target population was U.S. and Canadian adults who play sport simulation games on a regular basis. The two countries were selected as major markets for simulated and real-world sport consumption. Those with excessive gaming addiction symptoms were excluded, based on Lemmens et al.'s (2009) scale. Using Amazon Mechanical Turk, data were collected through convenience sampling. A total of 431 usable responses were collected, after removing unreliable/incomplete ones. Respondent demographics were as follows. The average age was 34.7. Gender included 59.9% male. For the racial/ethnicity category, 76.3% were Caucasian, 11.7% were African American, 9.5% were Asian. The median household income was in the \$60,000~80,000 range and 74% had been in college or had completed a college degree. Respondents were grouped by passion-type based on whether one scored higher in harmonious versus obsessive behaviors.

Instrument

Items for psychological experiences in sport simulation games, sport enjoyment (as a key indicator of sport appreciation; Kim et al., 2024), intention for sport consumption in real-world, and passion-type

were prepared. Psychological experiences were captured with psychological needs satisfied in simulated sport play. As known to determine psychological states/experiences in an activity (Newman et al., 2014) and to form motives and intentions for current/future behaviors, psychological needs were suitable for testing psychological experiences within gaming and their transfer into sporting intentions. Arousal, belonging, and achievement were selected, as psychological needs relevant to experiences and behaviors in gaming, sport consumption, and leisure (e.g., Kim & James, 2019; Newman et al., 2014; Przybylski et al., 2009). Items were adopted from existing 7-point Likert-type scales (e.g., Kim & James, 2019; Ko et al., 2017). See Table 1 for details.

Table 1

Psychometric properties.

Scale Items	Harmonious Passion (n = 313)						Obsessive Passion (n = 118)					
	Est	SE	Est/SE	AVE	Mean	SD	Est	SE	Est/SE	AVE	Mean	SD
<u>Arousal*</u>				.56						.68		
1. Excitement	.72	.04	16.20		5.47	1.23	.85	.04	22.48		4.74	1.41
2. Adrenaline rush	.80	.04	21.24		5.61	1.24	.84	.04	22.08		4.89	1.56
3. Fun	.73	.04	17.91		5.49	1.30	.79	.05	16.74		5.00	1.49
<u>Belonging*</u>				.57						.70		
1. Sense of belonging in a social group	.80	.04	22.81		5.16	1.31	.89	.04	23.03		4.79	1.45
2. Sense of affiliation to a social group	.76	.04	18.59		5.12	1.40	.83	.05	17.05		4.71	1.50
3. Sense of being part of a social group	.71	.04	16.65		5.14	1.29	.78	.04	17.93		4.98	1.44
<u>Achievement*</u>				.69						.74		
1. Sense of achievement	.90	.03	32.84		4.88	1.53	.89	.03	29.26		4.59	1.60
2. Sense of accomplishment	.80	.04	22.27		5.01	1.50	.85	.03	24.58		4.87	1.54
3. Sense of personal pride	.78	.03	24.40		4.99	1.53	.84	.04	19.19		4.97	1.58
<u>Sport Enjoyment</u>				.50						.64		
1. I [dislike-like] the sport.	.73	.04	17.61		5.50	1.11	.81	.05	16.19		4.67	1.43
2. I [hate-enjoy] the sport.	.72	.04	17.29		5.57	1.19	.84	.05	18.71		4.93	1.38
3. The sport is [boring – interesting].	.66	.05	13.65		5.53	1.19	.75	.05	15.82		5.19	1.48

Scale Items	Harmonious Passion (n = 313)						Obsessive Passion (n = 118)					
	Est	SE	Est/SE	AVE	Mean	SD	Est	SE	Est/SE	AVE	Mean	SD
<u>Participating Intention</u>				.49						.51		
1. I intend to physically play the sport.	.90	.03	26.67		5.33	1.23	.88	.04	20.07		5.31	1.22
2. I plan to physically play the sport.	.82	.03	29.17		5.25	1.25	.86	.04	19.80		5.37	1.03
<u>Spectating Intention</u>				.50						.50		
1. I intend to attend a match of the sport.	.84	.03	25.22		5.22	1.23	.88	.04	20.07		5.31	1.22
2. I plan to attend a match of the sport.	.89	.03	29.17		5.25	1.25	.86	.04	19.80		5.28	1.17
<u>Media Viewing Intention</u>				.50						.51		
1. I intend to watch a match of the sport on TV/Internet.	.88	.03	27.93		5.35	1.17	.93	.06	15.86		5.28	.92
2. I plan to watch a match of the sport on TV/Internet.	.86	.04	24.68		5.42	1.16	.81	.05	15.55		5.37	1.03

* Each item was worded "How much _____ do you feel when playing the sport simulation game?"

Sport enjoyment was measured with items from the Physical Activity Enjoyment Scale (Mullen et al, 2011), asking one's perception about the sport featured in the simulation game (7-point semantic-differential). Intentions for sport consumption used items modified from Cronin et al. (2000), asking about intention/plan to play/attend/watch the sport in the near future (7-point Likert-type scale). Passion-type was measured with Przybylski et al.'s (2009) scale that is fitted for the gaming context (e.g., "Sport simulation gaming allows me to live a variety of experiences," "I cannot live without sport simulation gaming"). Items for screening (e.g., sport simulation game play, US/Canada residency, game addiction symptoms, age), demographics (e.g., gender, race, household income, education), and attention checks (e.g., please check 3) were developed as well. After reviews from experts in sport management and gaming studies, an online survey questionnaire was prepared using Qualtrics.

Data Analysis

After data collection and screening, assumption tests, and Confirmatory Factor Analysis (CFA), multi-group SEM was conducted via mPlus7. With passion-type treated as a dummy variable, relations among psychological experiences, sport enjoyment, and sport consumption intention were tested and compared between harmonious and obsessive passion groups.

Results

Psychometric Properties

CFA was used for data on psychological experiences, sport enjoyment, and intentions. Inter-construct correlations were in reasonable ranges. The multi-group measurement model (S-B $\chi^2/df = 518.183/250 = 2.07$; CFI = .91; SRMR = .05; RMSEA = .07) had good fit. Cronbach's alphas were all greater than .70 (from .80 to .87), supporting reliability. For convergent validity (see Table 1), factor loadings were greater than .70 and AVEs greater than .50, with two exceptions from the harmonious passion group: one item for sport enjoyment (.66 loading) and participation intention (.49 AVE); both were retained for their theoretical importances and for being close to thresholds. AVEs were all greater than respective squared inter-construct correlations, implying discriminant validity. Overall, the measures had good psychometric properties.

Multi-Group SEM

The structural multi-group model had satisfactory fit (S-B $\chi^2/df = 518.183/250 = 2.07$; CFI = .91; SRMR = .05; RMSEA = .07). In the harmonious passion group (see Table 2), arousal ($\gamma = .40$, $p < .01$) and belonging ($\gamma = .25$, $p = .01$) were positively linked to sport enjoyment, but achievement was not ($\gamma = .04$, $p = .61$). Sport enjoyment was positively linked to participating ($\gamma = .28$, $p = .01$), spectating ($\gamma = .36$, $p < .01$), and media viewing ($\gamma = .47$, $p < .01$) intentions. Indirect effects from arousal and belonging to the three intention-types via sport enjoyment were all significant at $p < .05$. Further analysis of direct effects from psychological experiences to intention found two significant paths: from belonging to spectating intention ($\gamma = .17$, $p = .05$) and from achievement to media viewing intention ($\gamma = .15$, $p = .02$).

Table 2

Multigroup SEM results

Path coefficients	Harmonious Passion (n = 313)				Obsessive Passion (n = 118)			
	Est	SE	Est/SE	p-value	Est	SE	Est/SE	p-value
<u>Psychological Experience</u>								
<u>→ Sport Enjoyment</u>								
Arousal → Sport Enjoyment	.40	.10	3.94	<.01	.53	.11	4.84	<.01
Belonging → Sport Enjoyment	.25	.10	2.55	.01	.10	.08	1.18	.24
Achievement → Sport Enjoyment	.04	.07	.61	.54	.41	.12	3.57	<.01
<u>Sport Enjoyment → Intention</u>								
Sport Enjoyment →								
Participating Intention	.28	.11	2.63	.01	.18	.20	.89	.38
Sport Enjoyment →								
Spectating Intention	.36	.10	3.42	<.01	-.17	.21	-.79	.43
Sport Enjoyment →								
Media Viewing Intention	.47	.10	4.86	<.01	.44	.20	2.17	.03

* Significant direct paths from psychological experience to intention were:

- In Harmonious Passion: Belonging → Spectating Intention ($\gamma = .17$, $p = .05$), Achievement → Media Viewing Intention ($\gamma = .15$, $p = .02$)

- In Obsessive Passion: Achievement → Participating Intention ($\gamma = -.28$, $p < .01$)

In the obsessive passion group (see Table 2), arousal ($\gamma = .53$, $p < .01$) and achievement ($\gamma = .41$, $p < .01$) were positively linked to sport enjoyment, whereas belonging was not ($\gamma = .10$, $p = .24$). Sport enjoyment was positively linked to media viewing intention ($\gamma = .44$, $p = .03$) but not to participating ($\gamma = .18$, $p = .38$) nor spectating ($\gamma = -.17$, $p = .43$) intentions. Indirect effects from arousal ($p = .07$; marginal) and achievement ($p = .05$) to media viewing intention via sport enjoyment were significant. Additionally testing direct effects, only the path from achievement to participating intention ($\gamma = -.28$, $p < .01$) was significant; notably, in the negative direction.

Discussion

Theoretical Discussion

To inform the strategy development for synergistic effects between gaming and sport, this study assessed if and how psychological experiences in sport simulation gaming can transfer into intentions for real-world sport consumption. Referring to the diversification theory (Lou, 2017), the transfer was earlier explained with sport games enhancing one's appreciation/interest in sport as an untraditional and diversified way of sport play (Jenny et al., 2017; Kim et al., 2024). The synergy (i.e., overall positive relation) was partially supported, conditional upon passion-type.

In the harmonious group, arousal and belonging had indirect effects (i.e., transfers) on all three intention-types through sport enjoyment. Direct effects were also reported (belonging to spectating and achievement to media viewing), adding support to the synergy between gaming and sport. The transfer/synergy demonstrated sport simulation games' utility in promoting real-world sport (Kim et al., 2024) based on harmonious passion's openness towards new experiences (Pryzybylski et al., 2009). Arousal and belonging played critical roles in the transfer (based on significant indirect paths), insinuating crossovers of hedonic (e.g., adrenaline rush, drama) and social (e.g., team play, bonding) benefits between the two contexts. Aligning with the findings, prior studies identified these benefits as key motives for both sport games and sport consumption (e.g., Pizzo et al., 2018). Achievement was not such a case, with the disconnect perhaps due to achievements in gaming being tied to forms (by self and/or vicariously via one's team/players in spectating/viewing) and skill sets (e.g., hand-eye coordination or full body coordination in participation) different from and thus less transferable to sport.

In the obsessive group, indirect effects from arousal and achievement to sport enjoyment and further to media viewing intention were positive and (marginally) significant, indicating the transfer but to a lesser degree than harmonious group. Direct effect was negative (achievement to participation), which was stronger than the positive indirect effects combined. Overall findings evidenced a competing relation between gaming and sport in this group, supporting widespread concerns (Drape, 2021). Delving into path patterns, the transfer was only witnessed for media viewing intention (vs. all three intentions in harmonious group), supporting obsessive passion's defensiveness towards other activities (Vallerand, 2016). The transfer did not occur with belonging (contrary to harmonious group), aligning with studies reporting obsessive gamers to establish in-game social ties but with increased isolation in/with real life (Mandryk et al., 2020). Achievement played an interesting role in this group, transferring into media viewing intention but reducing participation intention. Achievements in sport gaming have more resemblances with that in sport media viewing (e.g., made/sensed via team/players; connection to team/players strengthens with obsessive passion) may have enabled a positive relation; more differences from participation (e.g., made in-person) perhaps resulted in a negative one.

Although the synergy between simulated and real-world sport was only found in harmonious group, transfers were reported in both groups. Sport enjoyment was the underlying mechanism in the transfers, which was prompted heavily by arousal (explaining 16% of variance in harmonious and 28.1% in obsessive groups) and is known as one of the strongest predictors of sport behavior (e.g., Zhang et al., 2022). Sport enjoyment's mediating role illustrated the importance of shifting one's focus of appreciation from gaming-associated benefits to sport-associated ones in pursuits for synergistic effects with sport simulation games.

Practical Discussion

The potential of utilizing sport simulation games in the promotion of real-world sport consumption was contingent upon passion-type, necessitating diversified marketing strategies. Those with harmonious passion should be the prioritized target segment. For this passion-type, arousal (e.g., excitement, drama, sensory stimulation) and belonging (e.g., interaction, affiliation, teamwork) can be highlighted as psychological benefits of simulated sport play that overlaps and can also be enjoyed in real-world sport. Prior research (e.g., Kim et al., 2024) even reported that combining the two forms of sport exposures can amplify the appreciation/enjoyment of benefits. These points can be relayed to sport simulation gamers via in-game messages or online gaming communities, with strong emphasis on the "sport" as an enjoyable content/subject. Showcasing esports players trying out real-world sport and sharing their experiences of arousal, belonging, and sport enjoyment can be a way to demonstrate and facilitate the transfer of benefits across contexts. This initiative can be effective when sport franchises/teams associate affiliated eSport teams (e.g., CLTX Gaming run by Boston Celtics) and can be supplemented by opportunities for real-world sport (e.g., sport lessons or watch parties with eSport players, eSport-themed nights, or gamer discounts at/for sport events).

Those with obsessive passion would be the lesser priority target segment. If this group is pursued, the negative effects of achievement on sport participation intention must be addressed first. A common side effect of watching elite sport is realizing the physical gap between oneself and elite athletes that discourages physical play (Chalip et al., 2017). This could have occurred with simulation gamers, which can be lessened via communication (e.g., "don't have to be great to play the sport") or presenting examples of relatable others (e.g., streamers, other gamers) enjoying sport in both forms. Once the negative effect is dealt with, sport simulation games can be utilized for promoting (only) sport media viewing. Pointing out sport gaming and sport media viewing's overlapping benefits can work for the obsessive group as well. Compared to the harmonious group, emphasis on arousal and sport enjoyment can remain, achievement should be added, and belonging will become less relevant. Manager mode (where games are auto-played with gamers focusing on setting tactics and rosters, for example) may be worth attention for being frequently played by heavy gamers and its closer resemblance with sport media viewing (e.g., no direct control of players' on-field play) that can make crossover between contexts easier; displaying information about real-world match schedules of the simulation featured teams/players during manager mode play can direct gamer's attention to sport media viewing.

Limitations

Several limitations are worth noting. First, psychological experiences in sport simulation games were examined with three psychological needs that are fundamental to leisure activities but can be expanded to other relevant ones (e.g., escapism); some may be able to explain the disconnect between simulated and real-world

sport (e.g., fantasy). Second, behavioral intentions were assessed with two items, which can benefit from more rigorous measurement or capturing actual behaviors. Last, longitudinal or intervention design are suggested to better assess causality.

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