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Article

Insight of embodied experience: Influencing tourists' behavior in mass participant sports event

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Abstract: Sports events hold significant cultural, tourism, and societal value. With the growing popularity of sports events, mass participation sports events (MPSE) have become a focal point of research. Existing literature on MPSE primarily emphasizes the organizational aspects of the events, while the embodied experiences from the participants' perspective remain underexplored. This study uses the renowned Guangzhou Marathon in southern China as a case study. The objective is to investigate and enhance the understanding of the embodied experiences of MPSE tourists through a quantitative methodology, focusing on the biomechanical aspects of participation. Additionally, this study aims to explore the antecedents and consequences of embodied experiences in relation to physical engagement and movement dynamics. The findings highlight the crucial role of embodied experience in shaping tourists' perceptions, physical interactions, and subsequent behavioral intentions. Specifically, the research indicates that tourists' physical experiences impact perceived value, satisfaction, and loyalty intentions through both moderating and mediating effects. The study also emphasizes the importance of understanding the biomechanics of movement during events, which can enhance participant engagement and overall satisfaction. Sustainable event management strategies that consider the biomechanical implications of participant experiences are also proposed.

Keywords: mass participant sports event; MPSE; embodied experience; biomechanics; event attachment; tourist satisfaction; Guangzhou marathon

1. Introduction

Sports events has gained significant attention as it showcases culture, attractions, and society of the host city [1,2]. With numerous people travelling to attend sports events, sports event tourism offers tourists a unique and exciting experience, and becomes a new trend and social phenomenon [1]. From the perspective of destination development, sports event tourism generates an economic boost for the host city/country through ticket sales, accommodation, transportation, and other related tourist expenses [3,4]. Among all types of sports events, mass participant sports events (MPSEs) provide sports fans with the opportunity to participate in the entire process of the event, and particularly noteworthy. However, due to the scale of organization and the characteristics of sports, only a few sports can be organized as MPSEs. This means, instead of being a spectator, only few sports participants can be both sports participants and tourist. Their experience has long been ignored.

MPSEs have been gaining popularity for decades [1]. Both the government and the market seek to benefit from the event, which resulted in challenges due to commercialization and modernization and lack of uniqueness in experience planning and design [5]. The stakeholders of MPSE are diverse and have different purposes [6]. The current situation of MPSE development leads to less attention to event

participants [6]. Event participants are the most important part of the event and in turn promote a better event [1]. Event studies have recently begun to focus on the experience of event participation [1]. The existing literature on MPSEs experience has mainly focused on the individual behavior based on personal background and the intention of behavior [7,8]. The internal mechanism of how tourist satisfaction influenced in an emotional and embodied way is still undefined [8]. The whole event experience, quite similar to the tourist experience, is a dynamic process and can be divided into three phases: pre-event experience, during event experience and post-event experience [1,7]. The context of event, for example the culture content, seasonality, liminality can have strong influence on event experience [7,9]. While some researches have addressed integrated factors influencing the overall experience, the literature fails to consider the role of body involvement and the function of emotion in the dynamic process of experience construction [10].

The embodied cognition theory (ECT) is promoted by Varela, Thompson and Rosch [11], and it suggests that cognition is shaped by the state and capacity of the body, including memory, body interaction with the environment. Embodied cognition theory is applied in tourism and event context to study the interaction between body, cognition, and situation [12]. Embodied experience emerges as an important predictor of tourists' attitudes towards the event and their participation in event tourism [1,7,13,14]. In general, the more the body and emotions are involved in the tourist behavior, the deeper the experience could be [13,14]. Interestingly, even when the embodied experience is quite painful or negative, for example in the context of dark tourism, transformative tourism, it has positive outcomes and contributes to building the meaning of life [15].

This study intends to explore the intricate nature of individual tourist experience, especially their embodied experience within the MPSE context. This study employed qualitative methodology to investigate the influence of embodied experience, emotion, perceived value, perceived cost, and event attachment on tourists' satisfaction and intention to revisit events. The study drew upon the theoretical framework of ECT to develop a research framework, as illustrated in **Figure 1**. The framework demonstrates the factors that influence tourists' intention to revisit events in MPSEs. By examining the body involvement, emotional function, significance of situation and their intricate interaction in the process of constructing experience in the context of events, this study broadens the existing knowledge of the literature and provides valuable insights into the multi-dimensional dynamics underlying tourist behavior and their behaviors towards attending MPSEs.

A comprehensive case study of Guangzhou Marathon will be provided through this study as the organization of MPSE is under complex nature in Chinese context. This study aimed to contribute to theory in two main areas. Firstly, the significance of body as well as emotion in sports event experience is addressed. By emphasizing the body and emotion dimensions of event embodied experience, this study strengthened the theoretical framing of body involvement and emotional factors in the scope of MPSE research. Secondly, a model of experience process was developed for MPSE. Through the field observation data analysis, the moderating role of body and emotion was unveiled. The findings give knowledge for the advancement of MPSE research, expanding the internal and external factors shaping tourists' event participation.

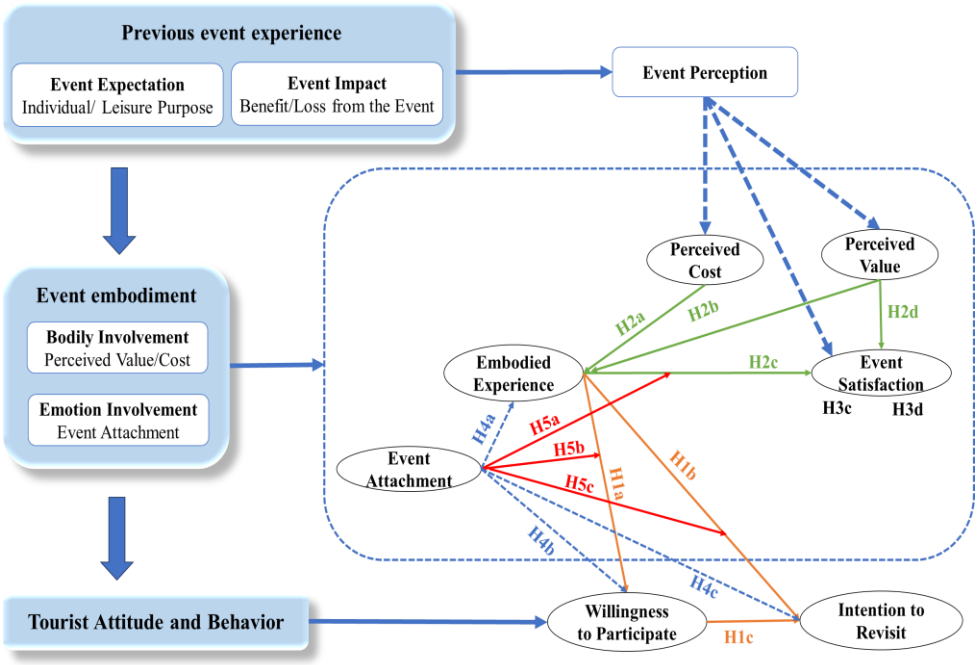


Figure 1. Theoretical framework.

2. Literature review

2.1. The influence of embodied experience on tourists' behaviors

Recent studies have demonstrated that tourism events have switched attention to body focus in tourists' experience in event context [1]. This embodied experience differs from the typical tourist experience in that it goes beyond mere sightseeing and addresses the full immersion of the tourist in the situation. Some researchers have proposed that as tourism itself is the interaction between body and environment, embodiment or embodied experience should be employed in the case of analyzing the experience which highly involved the body participation [10,16].

The embodied experience of tourists is shaped by their comprehensive understanding of the tourism process and their evaluation of its impact. Embodied cognition theory has been well-noted for its application in the examination of body, cognition, and situation, which are the main concepts in the theoretical framework. The embodied experience is characterized by bodily involvement, including thinking, emotions, perceptions, and sensory experience. In the context of tourism destinations, the embodied emotions and sensory experiences of tourists have a significant impact on their attitudes and behaviors, including consumption, revisit, and recommendation [17,18]. Empirical studies have demonstrated that the embodied experience, including cognitive responses, sensory factors, and effectiveness, positively influences visit intention to attractions. Of interest is the finding that negative aspects of the embodied experience might be contained, which could deepen tourists' behavior [15,19,20].

Similarly, in the domain of event tourism, tourists engage in more bodily participation [15,16]. The specific circumstances of different event situations may influence the embodied experiences associated with body and emotion factors in varying ways [10]. For instance, traditional festivals may offer the opportunity to

experience and appreciate cultural traditions, while music festivals may emphasize the creation of memories [19,20]. Such embodied experiences including both negative and positive sides, may influence the willingness to participate and intention to revisit in future events [12,16,21,22]. Furthermore, the embodied experience in event context is dynamic, and tourists who aim to participate in events are more likely to modify their behaviors based on not only a single event, but also the cumulative effect of their participation in a series of events [21]. In MPSE, there are two paths of motivation to participate: bodily involvement, which entails embedding the body into event and benefit/ forfeit from it; and emotional involvement, which directly affected by the emotional response to the event, illustrated in **Figure 1** [16,21,22].

With the expand of leisure activities, MPSEs for example, running events, cycling events, has led to the establishment of annual and recurring events. The willingness to participate and the intention to revisit the event are two significant factors, which can predict tourists' behaviors in advance. Therefore, based on embodied cognition theory, this study reached following hypotheses:

Hypothesis 1a: Tourists' embodied experience has a positive effect on their willingness to participate.

Hypothesis 1b: Tourists' embodied experience has a positive effect on their intention to revisit.

Hypothesis 1c: Willingness to participate mediates the relationship between tourists' embodied experience and their intention to revisit.

2.2. The influence of tourist embodied experience on event perception

Research of event perception has received considerable attention [1,15]. The perception of tourists of their embodied experience is confirmed based on the culture and tourist destination. Similarly, the perception embodied experience in event context is impacted by the event and the environment, which is of important value [12,22]. For example, the positive atmosphere in an event can increase tourists' perception of the event and increase their stay or expense [15].

Event perception is influenced by the value, cost and satisfaction derived from the experience. Perceived value represents the overall assessment of the event experience, while perceived cost refers to the amount paid or given to obtain this experience. Perceived value and perceived cost relate to the expense of the obtained experience, while satisfaction evaluates the fulfilment of expectations in relation to a number of internal and external factors of experience [7]. The existing literature has based on ECT showing that, the more immersive the embodied experience is, the more positive the tourist will have for the perceived value in the event [15]. The perceived value of an event can be enhanced by increasing the perceived benefit while decreasing the perceived sacrifice. The perceived cost of an event can be evaluated by examining the actual monetary and non-monetary expense [23,24]. In the context of tourism and events, satisfaction can be achieved by event organizers who provide event services. While the relationship between satisfaction and tourists' behavior, such as willingness to participate or intention to revisit, has been explored, the majority of research has confirmed that when tourists' satisfaction is higher, their intention to revisit the event tends to be higher [5,12,25].

Some studies have defined the relationship between tourist embodied experience and tourists' perception [7]. For instance, embodied experience has significant effect on perceived value and satisfaction, and the perceived value mediates the effect from embodied experience to satisfaction [7,25]. However, with the increasing physical and emotional involvement in the embodied experience, the mechanism between embodied experience and tourists' perception has not been defined in event context. This study hypothesizes that:

Hypothesis 2a: Tourists' perceived cost has a negative effect on their embodied experience.

Hypothesis 2b: Tourists' perceived value has a positive and significant effect on their embodied experience.

Hypothesis 2c: Tourists' embodied experience has a positive effect on their event satisfaction.

Hypothesis 2d: Tourists' perceived value mediates the relationship between tourists' embodied experience and event satisfaction.

2.3. The importance of event satisfaction and event attachment in MPSE

Satisfaction is defined as the degree to which a product or service provides an enjoyable level of consumption-related fulfilment [3,25]. It plays a pivotal role in understanding consumer behavior and customer retention [5,25]. In the context of tourism and events, satisfaction is a crucial factor in the overall tourism process. Satisfaction is an emotional outcome that can be illustrated as love, excitement, frustration, and thrill [25,26]. Tourist satisfaction is a function of tourists' expectations and experiences in general. Prior to visiting a destination, tourists form expectations based on the existing destination image. When the perceived benefits exceed the money, time, or effort invested, tourists are satisfied. In the context of events, when an event is perceived as very good or satisfied by attendees, it is more likely for them to revisit the event or re-participate in the future. Nevertheless, if event attendees perceive the event to be unsatisfactory, they are less likely to participate again in the future [5,25]. The existing research has shown that event satisfaction has strong influence on their willingness to participate similar events as well as their intention of revisit for both event goers including event spectator and event participants [27–29].

Similarly, event attachment can be defined as an emotional bond between an individual and an event [21,29]. A robust attachment can give rise to a profound connection with the event, which may subsequently give rise to a rich array of emotional memories and associations pertaining to the event [21,30,31]. It can be reasonably assumed that these memories and associations will attract the attention of individuals and motivate them to participate in the event, which will subsequently affect their behavior and emotions during the event [32–34]. Consequently, event attendees will internalize the event into their self-concept by undergoing a series of progressive steps, beginning with awareness, progressing to attraction and culminating in allegiance [1,31]. Event attachment is always considered to be the moderator in tourism and event [21,30,31]. The relationship between tourists' perceptions, embodied experiences and post-event behaviors can be significantly influenced by the strength of their attachment to the event. The literature indicates that the path of

influence is via the perceived value and perceived cost, which then leads to the satisfaction with the event and the subsequent behavior, both cognitively and emotionally [21,30]. The aforementioned findings have demonstrated that event attachment has been a significant factor in the process of embodied experience construction [30,35], and have supported the following hypotheses:

Hypothesis 3a: Event satisfaction has a positive effect on their willingness to participate.

Hypothesis 3b: Event satisfaction has a positive effect on their intention to revisit.

Hypothesis 3c: Tourists' satisfaction mediates the relationship between embodied experience and willingness to participate.

Hypothesis 3d: Tourists' satisfaction mediates the relationship between embodied experience and intention to revisit.

Hypothesis 4a: Event attachment has a positive effect on their embodied experience.

Hypothesis 4b: Event attachment has a positive effect on their willingness to participate.

Hypothesis 4c: Event attachment has a positive effect on their intention to revisit.

Hypothesis 5a: Event attachment moderates the relationship between embodied experience and event satisfaction.

Hypothesis 5b: Event attachment moderates the relationship between embodied experience and willingness to participate.

Hypothesis 5c: Event attachment moderates the relationship between embodied experience and intention to revisit.

As shown in **Figure 1**, the conceptual framework was constructed based on above discussions. The model demonstrated the relationship and mechanism among tourists embodied experience, perception, and behaviors, as well as the event attachment.

3. Methodology

3.1. Questionnaire design and measures

The survey questionnaire was designed through a comprehensive literature review and tailored to the specific context of MPSE. A meticulous double translation process was employed to translate the initial questionnaire into Mandarin. This involved the input of experts who provided feedback to enhance the language, semantics, and content. A small-scale pilot study with 108 marathon runners who had previously travelled to participate in a marathon was conducted to improve the clarity and validity of the questionnaire. Subsequently, an exploratory factor analysis was conducted to identify and remove any items that were deemed to be invalid. The final questionnaire, comprising 22 questions for variables and other 7 questions for demographic basis, exhibited high reliability with a Cronbach's alpha coefficient of 0.912. The KMO and Bartlett's chi-square test, discriminant test, and t-test were employed to assess the data for validity. Those who had participated in the pilot study provided feedback on the questionnaire, which was then revised in accordance with their suggestions. The revised questionnaire was reported to be more comprehensive and clearer.

The questionnaire comprised two sections. The initial section employed a seven-point Likert scale to assess the latent variables, with anchors ranging from 1 (strongly disagree) to 7 (strongly agree). This section encompassed the dimensions of variables, which includes perceived value, perceived cost, satisfaction, willingness to participate, intention to revisit, and event attachment. The embodied experience was measured by 5 items [7,15], the perceived value and perceived cost together were measured by 4 items [15,21,36], event satisfaction was measured by 3 items [5,28,29,37], event attachment was measured by 3 items [30], willingness to participate was measured by 4 items [21,38,39], intention to revisit was measured by 3 items [29,37,40]. These established scales have been shown to be reliable and valid in previous studies conducted by both domestic and international scholars. The second section focused on demographic variables and general travel behaviors of marathon runners. The primary demographic data collected included gender, age, educational level, income, occupation, the number of participants in the marathon game, the number of years spent running marathons, and other relevant information.

3.2. Research background

The Guangzhou Marathon is one of the most renowned and high-profile marathons in mainland China. It is held annually in December since its establishment in 2012. The Guangzhou Marathon is a member of the China Marathon Majors and has been designated a World Athletics Gold Label Road Race. It has developed into the fastest-growing marathon in south China. The theme of the Guangzhou Marathon, 'Renowned City, Harmony and Health', integrates national fitness and competitive sports, and has become an emblem of the city's appearance, social and cultural identity. As a mass participation sports event, the Guangzhou Marathon aims to attract not only local citizens to participate in the MPSE, but tourists and runners to promote the event and sports spirit. In this way, the Guangzhou Marathon has the characteristics of MPSE and serves as a platform for the deep involvement of embodiment.

As of the end of 2023, the Guangzhou Marathon has been held for 10 sessions, with a total of over 260,000 participants. During each session, the event generates a significant amount of revenue related to marathon events, exhibitions, and city tourism. The success of the Guangzhou Marathon has led to the event's expansion in terms of both influence and reputation.

3.3. Data collection and data analysis

This study originally investigated the tourist embodied experience in the Guangzhou Marathon game. One of the researchers is an experienced marathon runner and has access to know runners from different cities in China. Through the network built by researchers, the research started with small scale interviews with different types of runners. The main aim of the interviews was to find out what is most important to runners when travelling to participate in a marathon event, as well as to gain insights into their previous experiences. Based on the results of the interviews, a large-scale questionnaire survey was applied and conducted. In order to meet the UNWTO definition of tourists, the questionnaire started with the question of whether these

runners were tourists staying in the host city for the event [41]. Convenience sampling and snowball sampling were applied together among these marathon runners.

The survey was conducted from October 2023 to January 2024 and divided into 3 phases, during and after Guangzhou Marathon 2023. The Guangzhou Marathon 2023 marked the resumption of the event following the postponement caused by the global pandemic. The last session had taken place in 2020. Phase 1: October–November 2023, the quota for runners to participate in Guangzhou Marathon 2023 was released, one of the researchers started from the surrounding to conduct survey, send questionnaire to those who was selected and sure to participate in the event. Phase 2: December 2023, the on-site questionnaire survey was conducted during the event, at the marathon exhibition venue before the event, finishing line and various parts along the running course one event day. Phase 3: January 2024, the online survey was distributed to those who had confirmed their participation in the 2023 Guangzhou Marathon. A total of 600 questionnaires were distributed and 568 were returned. After reviewing the validation of data, the questionnaires with missing answer, same answer for all questions and short completion time (online survey only) were excepted. A total of 512 questionnaires were used for the next step of data analysis. The effective response rate was 90.1%.

The data analysis was applied with the software SPSS 26.0 and AMOS 26.0. All respondents had completed a full marathon, and they identified themselves to be runners and tourists to Guangzhou. Of the valid sample, 54.1% were male and 45.9% were female. The age distribution is concentrated in the 25–34 age group, accounting for 44.3% of the total, followed by 14.1% in the under 24 age group and 12.3% in the 45–49 age group. The majority of respondents have a high level of education, with 48% holding a university or college degree and 34.6% holding a postgraduate qualification. The runners were from all general categories in the Classification Catalogue of Various Occupations in the People's Republic of China (PRC) [42]. While 64% have attended marathons for 2–6 years, 51.2% have participated in marathons 1–3 times, followed by 29.9% who have participated in marathons 10 or more times. The sample data was found to be reliable in terms of gender, age, education level and income, which is consistent with runners' data released by CAA [43].

4. Findings

4.1. Validity and reliability

SPSS 26.0 was employed to exhibit the satisfactory reliability. The Cronbach's alpha coefficients ranging from 0.774 to 0.881, with a total Cronbach's alpha coefficient of 0.958. The KMO value of 0.918, and the Bartlett's test of sphericity was found to be significant. The principal component analysis demonstrated that the seven factors collectively explained 70.063% of the variance, providing evidence for the construct validity of the questionnaire.

To further identify the seven factors are reliable, the *controlling for the effects of an unmeasured latent method factor* was employed to avoid the potential standard method bias, see **Table 1** [21,44]. The Harman one-way method used to test the common method bias, and the first factor accounted for 27.345 % (under 40%) of the unspun axis. The results showed that adding a standard methods factor (CM) to the

seven-factor model leading to poor fit. Above suggested that the common method variance (CMV) had minimal influence to the results, and the seven factors are suitable for further analysis.

Table 1. Common methods bias test.

Models	X^2	d*f*	GFI	RMSEA	RMR	CFI	NFI
One-factor Model	3440.025	189	0.586	0.143	0.183	0.695	0.615
Seven-factor Model	597.931	188	0.899	0.046	0.043	0.856	0.845
Eight-factor Model (Seven factor Model + CM)	1797.700	187	0.684	0.130	0.213	0.658	0.684

Seven-factor: Perceived Value + Perceived Cost + Event Attachment + Embodied Experience + Event Satisfaction + Willingness to Participate + Intention to Revisit
One-factor: Perceived Value, Perceived Cost, Event Attachment, Embodied Experience, Event Satisfaction, Willingness to Participate, Intention to Revisit
CM = Common Methods factors.

4.2. Confirmatory factor analysis

AMOS 26.0 was used to do the confirmatory factor analysis (CFA) for the overall model fitness. Standardized Loading of each variable were examined and illustrated in **Table 2**, with the value ranged from 0.629 to 0.951, and all reached significant level (when $p < 0.01$). The CR of each dimension (measured altogether by similar variables) ranged from 0.778 to 0.90 (above suggested value 0.7). The AVE of each dimension ranged from 0.603 to 0.729 (above 0.5). These indicated the variables have the reasonable convergent validity to measure. The discriminant validity was tested by comparing the square root of each variable' AVE value and the correlation coefficient. The result showed the high discriminant validity of the questionnaire.

Table 2. Confirmatory factor analysis.

Variable/Item	Standardized Loading	CR	AVE
Perceived Value			
PV1 Increase physical involvement and health	0.748	0.778	0.633
PV2 Gained benefits from the participation	0.841		
Perceived Cost			
PC1 Spend more time/money preparing for the event	0.836	0.802	0.668
PC2 Perception of increased risk during the event	0.798		
Event Attachment			
EA1 Sense of Identification to the event	0.806		
EA2 Importance of participating the event	0.888	0.852	0.658
EA3 Emotions towards the event rather than other events	0.732		
Embodied Experience			
EE1 More sensory experience (taste/smell etc.) in the event	0.951		
EE2 Strong emotion/mind changes in the event experience	0.948	0.904	0.657
EE3 Strong body involvement in the event experience	0.698		

Table 2. (*Continued*).

Variable/Item	Standardized Loading	CR	AVE
EE4 More body and environment interaction in the event	0.707	0.904	0.657
EE5 More interaction with others in the event	0.705		
Event Satisfaction			
ES1 Satisfaction of the overall event	0.850	0.886	0.721
ES2 Irreplaceability of the event	0.871		
ES3 Recommendation to others about the event	0.825		
Willingness to Participate			
WP1 Willingness to participate before the existing event	0.754		
WP2 Pay more attention to train for the existing event	0.843	0.857	0.603
WP3 Readiness of knowledge to the existing event	0.859		
WP4 Willingness to be staff/volunteer of the existing event	0.629		
Intention to Revisit			
IR1 Highly likely to participate the event again	0.711	0.883	0.729
IR2 Looking forward to attend the event again	0.943		
IR3 Making reparation for attending the event again	0.873		

In addition, the model fit indicated that: $X^2 = 583.74$, d$f = 188$, $X^2/df = 3.105$, GFI = 0.895, AGFI = 0.889, RFI = 0.847, RMSEA=0.054. Those results demonstrated the model was generally well fitted, and was deemed suitable for subsequent analysis.

4.3. Correlation analysis

As illustrated in **Table 3**, the correlation coefficient between each two variables ranged from 0.318 to 0.749, with all of them being highly significant. This led to the examination of the potential multi-collinearity, so the variance inflation factor (VIF) was tested. The VIF of each dimension ranged from 3.091 to 6.736 (under suggested value 10), indicating that there is no multi-collinearity among all dimensions. Nevertheless, the correlation coefficient between Embodied Experience and Perceived Cost was 0.318, a positive number and relation between these two, indicating that hypothesis H2a was not supported. Other hypotheses were tentatively confirmed.

Table 3. Correlation analysis.

Construct/Dimension	Mean	Standard Deviation	1	2	3	4	5	6	7	VIF
1. Perceived Value	4.892	1.323	1.000							5.114
2. Perceived Cost	4.530	1.580	0.536**	1.000						3.253
3. Event Attachment	5.254	1.139	0.546**	0.373**	1.000					4.883
4. Embodied Experience	5.381	0.965	0.478**	0.318**	0.598**	1.000				4.232
5. Event Satisfaction	5.357	1.111	0.514**	0.333*	0.749**	0.615**	1.000			4.599
6. Willingness to Participate	5.191	1.203	0.686**	0.544**	0.601**	0.537**	0.559**	1.000		6.736
7. Intention to Revisit	5.353	1.264	0.498**	0.434**	0.498**	0.559**	0.460**	0.533**	1.000	3.091

*: $p < 0.05$, Slight significance, two-tailed. **: $p < 0.01$, High Significance, two-tailed.

4.4. Hypothesis testing

4.4.1. Structural equation model

The structural equation model (SEM) using maximum likelihood estimation was applied to test the hypotheses, as indicated by the aforementioned tests. The model fit index is $X^2 = 602.728$, d$f = 188$, X^2/d$f = 3.206$, RMSEA = 0.028, GFI = 0.944, NFI = 0.944, CFI = 0.984, and NNFI = 0.982, indicating the predetermined criteria for an appropriate fit. As demonstrated in **Table 4**, the relationship between Event Attachment and Embodied Experience, as well as Event Attachment and Intention to Revisit, was not found to be particularly significant. Consequently, Hypothesis H4a and H4c were not corroborated.

Table 4. Hypothesis test results of structural equation model.

Hypothesis	Standard Coefficient	S.E.	C.R.	*p*	Results
H1a Embodied Experience → Willingness to Participate	0.167	0.061	4.259	***	Supported
H1b Embodied Experience → Intention to Revisit	0.420	0.065	8.017	***	Supported
H2b Embodied Experience → Perceived Value	0.483	0.047	3.113	***	Supported
H2c Embodied Experience → Event Satisfaction	0.432	0.061	3.780	***	Supported
H3a Event satisfaction → Willingness to Participate	0.266	0.038	5.579	***	Supported
H3b Event satisfaction → Intention to Revisit	0.085	0.023	4.234	***	Supported
H4a Event attachment → Embodied Experience	0.423	0.049	1.157	0.116	Unsupported
H4b Event attachment → Willingness to Participate	0.146	0.061	2.429	***	Supported
H4c Event attachment → Intention to Revisit	0.133	0.051	1.154	0.249	Unsupported

***: $p<0.001$, High Significance.

4.4.2. Mediating and moderating effects

Given the priori expectation that moderating and mediating effects would be present in the research model, the Process procedure in SPSS 26.0 was employed to construct a mediated model with moderation (also known as conditional process analysis) [45]. The Process procedure was employed to address the potential neutralization of mediating effects when moderating variables might exhibit effects at different levels (both high and low). As the sample size was of 512 participants, which met the recommended minimum sample size, the Bootstrap inference of 5000 was considered [45].

In the absence of a moderating effect, as posited by Hypotheses 1c and 2d, the Model 4 with Bootstrap inference of mediating effect was employed in Process [45,46]. The objective of mediating effect analysis is to calculate the direct and indirect effect of each variable [45]. As illustrated in **Table 5**, the partial mediating effect, the LLCI and ULCI (minimum and maximum values of confidence intervals), were above zero for each relation, and defined as the willingness to participate, accounted for 36.9% of the relationship between embodied experience and intention to revisit, while the perceived value, defined as event satisfaction, accounted for 24.8%. Therefore, the Hypothesis 1c and 2d were supported. Similarly, Hypothesis 3c, 3d was calculated. The LLCI and ULCI were above zero for the relation and at the significance level $p < 0.001$, and the data provided that Hypothesis 3c and 3d were supported. Event satisfaction accounted for 47.9% of the relationship between embodied experience and

willingness to participate, and 86.8% of the relationship between embodied experience and intention to revisit.

Table 5. Hierarchical multiple regression and mediating effect.

Variable	Intention to Revisit				Event Satisfaction			
	β	***SE***	***t***	***p***	***β***	***SE***	***t***	***p***
Constant	0.2466	0.0241	1.2081	0.000	0.337	0.050	2.248	0.000
Embodied Experience	0.6269	0.0513	2.2129	0.000	0.679	0.045	2.844	0.000
Embodied Experience*Willingness to Participate	0.3998	0.0412	9.7124	0.000				
Embodied Experience*Perceived Value					0.250	0.027	9.208	0.000
	Effect	SE	LLCI	ULCI	Effect	SE	LLCI	ULCI
Total Effect	0.994	0.038	0.920	1.068	0.938	0.030	0.880	0.996
Direct Effect	0.627	0.051	0.526	0.728	0.705	0.037	0.632	0.779
Mediating Effect	0.367	0.044	0.281	0.452	0.233	0.028	0.180	0.289
Variable	Intention to Revisit				Willingness to Participate			
	β	*SE*	*t*	*p*	*β*	*SE*	*t*	*p*
Constant	0.2466	0.2041	1.2081	0.000	0.337	0.150	2.248	0.000
Embodied Experience	0.863	0.065	13.330	0.000	0.679	0.045	2.844	0.000
Embodied Experience*Event Satisfaction	0.139	0.056	2.478	0.014				
	Effect	SE	LLCI	ULCI	Effect	SE	LLCI	ULCI
Total Effect	0.994	0.038	0.920	1.068	0.919	0.037	0.846	0.992
Direct Effect	0.863	0.065	0.736	0.991	0.440	0.059	0.325	0.556
Mediating Effect	0.131	0.066	0.008	0.266	0.478	0.065	0.362	0.615

For hypothesis 5a, 5b and 5c, the data analysis involved the use of Model 8 within the Process of the moderated mediation model [45], also using the bootstrap inference, see **Table 6** and **Figure 2**. Overall, event attachment had a significant effect on event satisfaction, willingness to participate and intention to revisit. Different levels of event attachment performed differently. The moderating impact of event attachment on the relationship between embodied experience and event satisfaction, willingness to participate and intention to revisit.

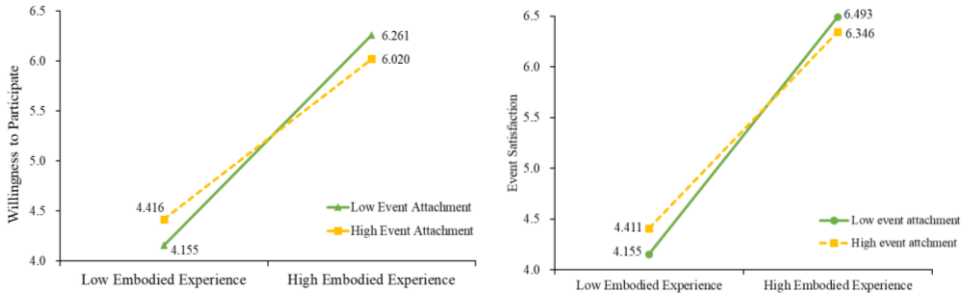
Table 6. Hierarchical multiple regression and moderating effect.

Variable	Event Satisfaction				Intention to Revisit				Willingness to Participate			
	β	***SE***	***t***	***p***	***β***	***SE***	***t***	***p***	***β***	***SE***	***t***	***p***
Constant	1.762	0.328	5.375	0.000***	0.105	0.532	2.197	0.000***	0.144	0.432	0.334	0.738
Gender	0.004	0.046	0.080	0.936	0.184	0.073	2.516	0.112	0.038	0.060	0.637	0.525
Age	0.083	0.013	6.248	0.000***	0.060	0.022	2.774	0.006**	0.018	0.018	1.017	0.310
Educational Level	0.157	0.030	3.307	0.236	0.083	0.048	1.725	0.085	−0.029	0.039	−0.732	0.465
Income Level	0.001	0.014	0.039	0.969	−0.047	0.022	−2.100	0.036*	−0.038	0.018	−2.120	0.034
Years of Marathon Run	0.092	0.042	2.183	0.029*	−0.160	0.049	−3.231	0.001***	−0.033	0.040	−0.811	0.418
Numbers of Marathon Run	0.003	0.027	0.116	0.907	0.030	0.031	0.960	0.337	0.214	0.034	6.225	0.000

Table 6. (*Continued*).

Variable	Event Satisfaction				Intention to Revisit				Willingness to Participate			
	β	***SE***	***t***	***p***	***β***	***SE***	***t***	***p***	***β***	***SE***	***t***	***p***
Event Attachment	0.832	0.075	11.073	0.000***	0.244	0.132	1.844	0.066	0.515	0.107	4.796	0.000
Embodied Experience	0.641	0.067	9.532	0.000***	0.623	0.115	5.405	0.000***	0.258	0.094	2.758	0.006
Event Attachment* Embodied Experience	0.055	0.013	4.358	0.000***	0.022	0.020	11.070	0.000***	−0.001	0.017	−0.039	0.969
R^2	0.898				0.794				0.855			
Adjusted R^2	0.807				0.630				0.730			
F	18.990***				77.296***				23.136***			

*: $p < 0.05$, **: $p < 0.01$, ***: $p < 0.001$.



(a) **(b)**

Figure 2. Moderated effect of event attachment. **(a)** Moderating role of event attachment in the relationship between embodied experience and willingness to participate; **(b)** moderating role of event attachment in the relationship between embodied experience and event satisfaction.

For Hypothesis 5a, the hierarchical multiple regression analysis indicated that there was a significant impact of embodied experience on event satisfaction ($t = 24.613$, $p < 0.001$). The pronounced *F* value and interaction presence ($t = -4.421$, $p < 0.001$) of event attachment indicated that event attachment exerted a different influence on the relationship between the embodied experience and event satisfaction. Furthermore, the control variables, namely the years of marathon run ($\beta = -0.215$, $t = 0.034$, $p < 0.001$), was demonstrated a correlation with event satisfaction. These findings support the hypothesis H5a.

For Hypothesis 5b, the hierarchy multiple regression model indicated that embodied experience had a significant impact on intention to revisit ($t = 26.341$, $p < 0.001$), underscoring its pivotal role in determining intention to revisit. The pronounced alterations in the *F* value and interaction presence ($t = 4.897$, $p < 0.001$) indicated that the strength of event attachment varied considerably at different levels of embodied experience, thereby influencing the intention to revisit. Also, the results indicated that control variables of age ($\beta = 0.060$, $t = 0.022$, $p < 0.001$), the year of participating marathon ($\beta = -0.160$, $t = 0.049$, $p < 0.001$) demonstrated their positive correlation with the intention to revisit. For individuals with low event attachment (−1 standard deviation), the embodied experience on intention to revisit was weaker, and conversely, for those with high event attachment (+1 standard deviation), the relationship was stronger. For individuals with low event attachment (–1 standard

deviation), the relationship between embodied experience and event satisfaction was weaker, whereas for those with high event attachment (+1 standard deviation), the relationship was stronger. These findings lend to support Hypothesis H5b.

For Hypothesis 5c, the hierarchy multiple regression model and the moderator analysis indicated that the event attachment was not significantly influenced the embodied experience on intention to revisit as the t value and F value were not significant even at the level of $p < 0.05$, and hypothesis H5c is not supported.

5. Conclusion

To conclude, the study demonstrated the significance of embodied experience in MPSE. The findings of Hypotheses of H1a, H1b, H2b and H2c substantiated the assertion that the embodied experience is pivotal at sports events, and a conclusion that was particularly evident in the context of marathon events. This conclusion is in accordance with the findings of previous research which indicate that the experience of embodiment plays an important role in the context of event tourism and sports events [47,48]. The lived and dynamic embodied experience was identified as an effective predictor variable for the evaluation of tourist attitudes and behaviors. In comparison to the findings of previous research [48,49], this study considered the experience itself to be embodied, and fully engaged with the body, mind and situation, particularly during the event day. The data obtained from the interviews revealed that, regardless of age or gender, the primary motivation for participating in the event was to temporarily escape the demands of daily life and immerse oneself in the event atmosphere.

For many runners, participation in a marathon has become an important lifestyle. Nevertheless, despite the rigor of training, the nuances of each event remain distinct. The collective experience of the crowd, the atmosphere, other runners, and the entire event can be distilled to an overarching theme for the runner. The H1c and H2d revealed that runners enjoy the opportunity to become tourists, which allows them to adopt a new identity at a tourist destination. As the more they experience the event physically and mentally, the more they will be influenced by it in the future. This study highlighted that for runners, the running track, the city view and their wellbeing afterwards, all played a significant role in shaping their individual feelings. Emotional responses, including pain and suffering, are of primary importance in MPSE. This finding was consistent with the early-stage research of emotion in event tourism [16,18,48,50], indicating that even the experience is negative, the influence is significant. The more intense these experiences are, the more participants will engage with the event atmosphere and the more they will recognize it. Nevertheless, runners will continue to attend marathon events according to their own experience gained from existing events and their desire for more customized services. This has led to the development of the MPSE, which provides more immersive experience design and different scenarios.

Furthermore, this study confirmed a significant positive correlation between the participants' willingness to participate and their intention to revisit the event. This finding was in alignment with existing literature, which emphasizes the importance of embodied experience in tourist destinations and inspires tourists to revisit [19]. As

researches have indicated that the embodied experience can be dynamic and processive [10], which in this study can be illustrated as when the transform of a runner from tourist of host city to a participant in marathon event, the experience varied. Previous studies of experience in sports events have primarily focused on bodily performance and utilized physical data [51,52], yet this study emphasized the subjective self-report perception data gathered in the whole event process. Along with loyalty to the event, the event satisfaction was found to be positively correlated with willingness to participate and intention to revisit [53,54], and this study also addressed the mediating effect of satisfaction as illustrated by H3a, H3b, H3c and H3d. This highlights the importance of fostering high levels of satisfaction among participants to encourage continued engagement.

What's more, the study highlighted the significance of event attachment in relation to its function in line with the H4b, H5a and H5b. Event attachment was identified as a moderator, exerting a direct influence on the relationship between embodied experience and other factors. Tourists who exhibit high levels of embodied experience and event attachment demonstrate a greater propensity to engage in participation and exhibit a stronger intention to revisit. The simple slope indicated that when the level of embodied experience is low, both the event satisfaction and the willingness to participate are more susceptible to the influence of event attachment. The formation of an attachment to an event is enhanced by the positive experiences and memories associated [55]. The existing literature on event attachment suggests this phenomenon may be associated with emotional engagement and a sense of connection with the event [55]. After a decade development of Guangzhou Marathon, the attachment to the event has become closely associated with the host city. The high emotional attachment to an event can increase the experience, decrease any negative perceptions of the host city, and make the experience more embodied and memorable [17,18,55].

6. Discussion

6.1. Theoretical implications

This study provided empirical evidence of embodied experience of marathon runners who travel for events. It demonstrated the mechanism of their experience in MPSE through the path of expectation-bodily and emotionally involvement-tourist attitude and behavior. Several implications have been identified and contributed to sports event studies literature.

Firstly, the embodied experience is situated at the core of the tourist and runner experience in MPSE. The sensory experience, bodily experience, and emotional experience have a considerable impact on the overall event experience. These embodied experiences not only enhance participants' satisfaction and enjoyment but also exert a significant influence on their behavioral intentions, such as future participation and word-of-mouth recommendations. The research indicates that positive embodied experiences correlate strongly with increased satisfaction levels and a higher likelihood of future participation. When participants experience a harmonious integration of these elements, they're more inclined to share their experiences positively with others.

Secondly, the attachment to marathons, has been demonstrated to exert a significant influence on their participation, and are strongly correlated with the independent variable, namely embodied experience. The study indicated that emotional and bodily connections, as well as event attachment, are critical components of runners' loyalty. The results demonstrated that a robust attachment to an event not only elevates motivation to participate but also augments the probability of future engagement. Given that emotion is typically associated with experience and can, in some cases, constitute a significant aspect of that experience, it is reasonable to conclude that event attachment exerts a moderating influence on the relation between embodied experience with other potential variables. The critical mediating factor between embodied experiences and loyalty behaviors appears to operate in a cyclical manner, where positive experiences strengthen attachment, and stronger attachment leads to more engaged and meaningful experiences in future participations.

Thirdly, in contrast to the majority of research, which employs qualitative methods to examine individual perceptions of embodied experience, this study employed a quantitative methodology within MPSE. By employing a systematic and comprehensive quantitative assessment of runners' experiences, the study not only corroborated the centrality of embodied experience but also elucidated the relationships and interactions between disparate experiential elements. The quantitative framework has also facilitated the development of more sophisticated measurement tools for assessing embodied experience. The statistical evidence provided by the quantitative analysis strengthens the theoretical foundations of the field and suggests new directions for existing theoretical frameworks related to embodied experience in sport tourism.

6.2. Managerial implication

The study yielded actionable and sustainable practices that can be applied in future event management, particularly in the organization and management of mass participation sports events. Primarily, it is essential to prioritize the enhancement of participants' sensory, bodily, and emotional experiences as a fundamental objective in event design. Event organizers should consider how different elements of the event experience interact and reinforce each other. The creation of multi-sensory engagement environments and emotional resonance points by event organizers can lead to a notable improvement in participant satisfaction and loyalty.

Secondly, it is of the utmost importance to foster participants' attachment to the event in order to increase participation. It is recommended that organizers design more interactive engaging activities to strengthen participants' connections to the event, thereby increasing their participation for the event, as well as the likelihood of them recommending the event to others.

Ultimately, the assessment of embodied experience may be employed to gauge the perceptions of runners and tourists with regard to the event in question, particularly for event management. By employing a systematic approach to quantify and analyze participants' experiences, organizers can more accurately identify and improve key experiential elements, thus enhancing the overall quality of the event and participant

satisfaction. The adaptability to other types of mass participation sports events could be further explored.

The implementation of these strategies enables event organizers to adopt a more inclusive and participant-centric approach to event tourism and sports events, which benefits not only tourists but also other types of event participants.

6.3. Limitations and future research

It must be acknowledged that no research is without flaws, and this study is no exception. There are a number of limitations to this study which could be further discussed in future research. Firstly, this study focused on the Guangzhou Marathon, which is representative of the typical road running race. It should be noted, however, that there are numerous other types of MPSEs. A further area for investigation would be to undertake a comparative analysis of the embodied experiences of different types of event and tourists. Such comparisons would facilitate a more comprehensive understanding of the manner in which diverse events influence participants' sensory and emotional engagement. Furthermore, case studies frequently encounter the challenge of limited conceptual generalization. It is therefore recommended that multiple case studies be incorporated in order to enhance the credibility and generalizability of the findings. It would be beneficial for future research to examine a number of marathons or different types of MPSEs to validate the conclusions drawn from this study and extend them further.

Secondly, the development of marathon events and other MPSEs in China is significantly influenced by the cultural context and governmental policies. In comparison to spectator sports events, participation events such as marathons are shaped by distinctive socio-cultural factors. Future research should consider these contextual influences in greater detail, in order to provide a more nuanced understanding of the factors driving participant experiences in Chinese MPSEs. Further comparison across cultures is also needed for the research field.

Last but not least, it should be noted that this study only surveyed runners during one session of the Guangzhou Marathon and did not account for changes in attitudes and experiences over different sessions. The participants reported that their involvement in marathon events had a long-lasting impact on their daily routines and behaviors [45]. Longitudinal studies should be conducted to gain a deeper understanding of the long-term significance and evolution of tourists' behaviors, attitudes and ultimately their well-being. Such studies would provide invaluable insights into the long-term effects of individuals participation and inform the experiences design for MPSE organizers.

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