# The Influence of Online Sports Games on Somatosensory Experiences and Sports Attitudes of Undergraduate Students in Taiwan

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## Abstract

The purpose of this study was to explore the relationship among the somatosensory experience, perceived experience value, and sports attitude towards online sports games in undergraduate students in Taiwan. The results of this study show that the sensory, emotional, and relational dimensions of the somatosensory experience can effectively predict perceived experience value and sports attitudes, and the hedonic value dimension of perceived experience value can effectively predict the sports attitude. The results and suggestions can be used as references for relevant units that are involved in university curriculum planning, for curriculum design, and to manage promoting student participation in sports.

## 1. Introduction

In 2013, the Sports Administration, Ministry of Education planned a policy that focused on the pursuit of healthy citizens, excellent competition, and a vibrant Taiwan. The survey report from the Ministry of Education on student participation in sports within the school year from 2009 to 2012 showed that the exercise duration for high school students was more than 30 minutes per week (excluding Physical Education), which is significantly lower than that of elementary school students. This indicates that the health-related physical fitness of students decreases with an increase in education level. To improve the students' physical fitness, it is necessary to develop sports fun through team sports by planning and fun activity design for students below senior high school to achieve the goal of cultivating individual sports habits. However, among the issues that are related to science and technology sports, somatosensory video game consoles have been the most popular in recent years. Somatosensory sports video games do not need to consider the restrictions of weather, sports venues, and equipment. Making use of the new mode of human–computer interaction using the virtual screen of somatosensory games would help individuals to achieve the effect of fitness and entertainment. For sports education, including the fun brought by sports video games in a course should help students to enhance their willingness to participate in sports because somatosensory game consoles derive explicit behaviors mainly from the positive and negative degrees of pleasure after an individual experience.

Therefore, this study used the viewpoint of experience marketing and took somatosensory experience and perceived experience value as the variables affecting sports attitude, thereby

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establishing a clear relationship between variables to explain the key factors that control the perception of sports attitude. The main objectives of this study were as follows: 1) to understand how the case is related to somatosensory experience using in-depth interviews and participant observations, along with discussing the motivation for subjects to accept the experience; 2) to establish the observable indexes of the main variables and the relational model between the variables through a literature review of somatosensory experience and perceived experience value, and samples of individual cases were collected for verification; and 3) to discuss the causal relationship and key influencing factors and to suggest conclusions for subsequent research and relevant service providers.

## 2. Literature Review

### 2.1 Somatosensory Experience

Experience is the perceptual response of individuals following stimulation by external factors, and it is generated by ontological emotions, while consumption experience is the special experience that needs to be triggered to be unforgettable. The concept of consumption experience does not emphasize function, quality or use of the commodity, but, rather, it emphasizes the service that is related to the commodity. With the rise of the experience economy, an increasing number of consumers are paying attention to purchases and using products that provide pleasure in the process of consumption. To provide consumers with the most valuable consumption experience, preference is more important than traditional brand image (Holbrook, 2000). Schmitt (1999) suggested the concept of experience marketing, pointing out that consumers often feel certain stimuli through observing or participating in events, which then induce motivation and generate a sense of identity or purchase behavior that increases the product's value. Research on experience marketing found that consumption experience is significantly correlated with customer satisfaction and loyalty; the quality of consumption experience, including positive evaluations, word of mouth recommendation, and loyal repurchase behavior, will also directly affect consumers' behavioral intentions (Kwortnik & Ross, 2007). Experience education is an educational way in which participants can learn knowledge through personal experience and feedback on their life and environment. The hope is to enable students to study seriously and improve their self-development ability through personal experiences and reflection (Hsieh, Wu, & Hsieh, 2007).

### 2.2 Perceived Experience Value

Perceived value can be regarded as consumers' evaluation of the utility that is provided by a product or service, i.e., the trade-off between giving and feedback (Zeithaml, 1988). Consumers evaluate the overall utility of the sacrifice and benefit of perception, and the concept of overall utility is a perceived value. Babin, Darden & Griffin (1994) indicated that consumers' direct benefits from a product are associated with a utilitarian value and they tend to have functional attributes. However, the emotional satisfaction that consumers get from product attributes is associated with a hedonic value, which tends to be more experiential. Empirical studies on service industry marketing have also shown that the perceived value has a positive impact on satisfaction, and the level of perceived value has an impact on customer satisfaction. After their personal experience, consumers believe that the ratio of their gain-to-

sacrifice is better than the expected importance of quality. Therefore, the higher the perceived value, the more helpful it will be to improve satisfaction (Park, Robertson, & Wu, 2004; Cronin, Brady, & Hult, 2000).

### 2.3 Sports Attitude

Sports attitude is an individual's cognition and feeling of his or her sports behavior and his or her inner subjective evaluation and feeling during or after participating in a sport. Sports attitude refers to the degree of individual performance in health, spirit, interpersonal relationships, weight control, and physical ability when engaging in sports, and it can also predict behavior occurrence. Students scored the highest in sports cognition, followed by affection and behavior. However, after the intervention of a sports course, students' overall sports attitudes were improved, and the frequency and duration of sports were increased. In his research on types basketball fans' experiences, Lu (2011) showed that sensory experience, emotional experience, thinking experience, relational experience, and experience satisfaction were positively and significantly correlated. Yang, Ni, & Shih (2014) studied the students' experiences of watching sports movies and their sports attitudes, and found that their experience of watching sports movies was positively correlated with their sports attitudes, and the emotional experience, thinking experience, action experience, and relational experience of the experience had significant explanatory power for their sports attitudes.

## 3. Research Method and Procedures

### 3.1 Research Model and Hypotheses

Based on the literature review mentioned above, this study established a research framework, including the following three main variables: somatosensory experience, perceived experience value, and sports attitude. The aim of this research was to establish the appropriateness of the research model through analysis, and we propose the following four research hypotheses:

H1: There are significant differences in somatosensory experience, perceived experience value, and sports attitudes for undergraduate students with different background variables;
H2: Somatosensory experience has a direct impact on the perceived experience value;
H3: Somatosensory experience has a direct impact on sports attitude; and
H4: Perceived experience value has a direct impact on sports attitude.

### 3.2 Operation and Measurement of the Variables

This study confirmed the measurement scale and variable operation mode of the questionnaire to explore the variable relationship of this study, which are explained below.

#### (1) Somatosensory Experience

This study referred to the marketing experience measurement indicators that were proposed by Schmitt (1999), which are the five dimensions of sensory experience (sense), emotional experience (feel), thinking experience (think), action experience (act), and relational experience (relate). These indicators were modified from a previous study by Yang et al. (2014). A Likert seven-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree), was used.

#### (2) Perceived Experience Value

Referring to the perceptual value work by Batra and Ahtola (1991) and Babin et al. (1994), this study used the two dimensions of hedonic value and utilitarian value as indicators to measure the benefits of undergraduate students who had different levels after somatosensory experiences. A Likert seven-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree), was used.

#### (3) Sports Attitude

In this study, the sports attitude scale was revised based on the research on students' sports attitudes by Yang et al. (2014). It can be explored using the following three aspects: cognitive related knowledge assistance, emotional value degree, and subsequent behavioral intention to responses to sports after the behavioral experience. A Likert seven-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree), was used.

### 3.3 Questionnaire Design

The questionnaire in this study was divided into two parts. The first part used the nominal scale, which mainly included students' background variables, such as gender, grade, weekly sports participation time, and sports participation for undergraduate students. The second part measured the degree of agreement between the three main variables, including somatosensory experience, perceived experience value, and sports attitude. Likert seven-point scales were used, ranging from 1 (strongly disagree) to 7 (strongly agree).

### 3.4 Data Collection

The subjects in this study were mainly the 4-year students who were taking university day classes on science and technology in southern Taiwan. Three departments were selected via purposive sampling, and four grades were stratified to be respectively sampled in one class as the data collection samples. There were 360 questionnaires that were distributed, and the expected number of valid questionnaires met the requirements for data analysis.

### 3.5 Analysis Method

Descriptive statistics and the structural equation model were used for data analysis. Descriptive statistics aimed to analyze the distribution characteristics of the effective sample background variables, and the structural equation model mainly discussed the causal relationships between variables. According to the analysis steps that were proposed by Anderson & Gerbing (1988), the analysis procedure included confirmatory factor analysis to verify the data fitness in the measurement model, and path analysis and fitness tests of the theoretical model were performed.

## 4. Data Analysis

Three hundred sixty formal questionnaires were distributed, and 323 were returned including 13 invalid questionnaires that were exclude because of an excessive number of missing values. Thus, there were 310 valid questionnaires returned, with an effective recovery rate of 86.11%. According to the sample structure analysis (Table 1), 56% of the students were male, and the students were mainly freshman, followed by sophomore, juniors, and seniors. The most frequent weekly sports participation time was 1 to 2 hours, followed by 3 to

4 hours and 5 to 6 hours. Students' sports participation partners were mainly classmates, followed by family members, friends, and others.

**Table 1.** Frequency Distribution of Demographic Variables

| Category | | N | % | Category | | N | % |
|---|---|---|---|---|---|---|---|
| Gender | Male | 175 | 56.5 | Participation Time | 1~2hr | 145 | 46.8 |
| | | | | | 3~4 hr | 73 | 23.5 |
| | Female | 135 | 43.5 | | 5~6 hr | 24 | 7.7 |
| | | | | | 7~8 hr | 68 | 21.9 |
| Grade | Freshman | 87 | 28.1 | Participation Partners | Classmates | 110 | 35.5 |
| | Sophomore | 80 | 25.8 | | Family | 88 | 28.4 |
| | Junior | 72 | 23.2 | | Friends | 63 | 20.3 |
| | Senior | 71 | 22.9 | | others | 49 | 15.8 |

In this study, confirmatory factor analysis was conducted for the somatosensory experience, perceived experience value, sports attitude, and other dimensions. Table 2 shows that the composition reliability values for somatosensory experience, perceived experience value, and sports attitude all exceeded the recommended values by more than 0.6, indicating that the internal consistency was quite high. For convergent validity, the average variance extracted for the somatosensory experience, perceived experience value, and sports attitude exceeded the significance level of the recommended value of 0.5. Overall, the samples had convergent validity.

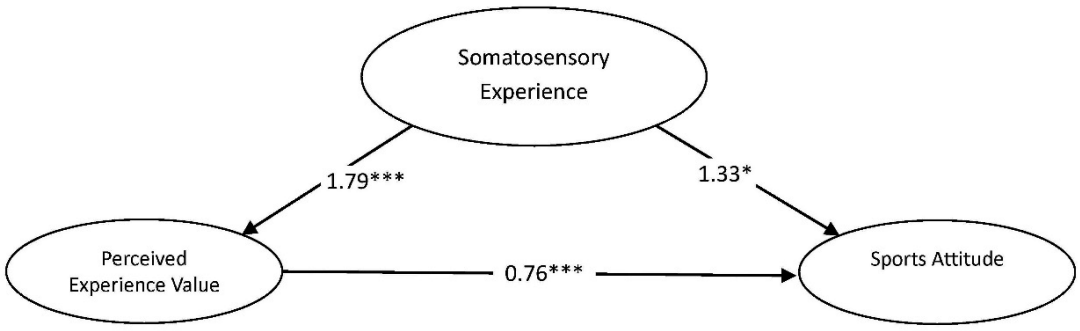
**Table 2.** Individual Reliability, Composition Reliability, Factor Load, and Average Variance Extracted

| Factor | Dimension (Item) | Factor Load | Individual Reliability | Composition Reliability | Average Variance Extracted | AVE Square Root |
|---|---|---|---|---|---|---|
| Somatosensory Experience | Sensory | 0.632 | 0.516 | 0.816 | 0.517 | 0.719 |
| | Emotional | 0.664 | 0.536 | | | |
| | Thinking | 0.814 | 0.360 | | | |
| | Action | 0.616 | 0.586 | | | |
| | Relational | 0.725 | 0.482 | | | |
| Perceived Experience Value | Hedonic Value | 0.886 | 0.950 | 0.894 | 0.805 | 0.888 |
| | Utilitarian Value | 0.903 | 0.858 | | | |
| Sports Attitude | Cognitive | 0.775 | 0.351 | 0.830 | 0.598 | 0.773 |
| | Emotional | 0.642 | 0.666 | | | |
| | Behavioral | 0.629 | 0.636 | | | |

For the research model, the significance level of the basic fitness index, $X^2$ , reached the level where $X^2$/df was equal to 2.955, which was less than 3. This indicates that the model fitness was appropriate. The goodness of fit index (GFI) value was 0.910, which is more than the recommended value of 0.8, and the adjusted goodness of fit index (AGFI) value was 0.815, which is higher than the recommended value of 0.7, indicating good fitness of the model. The root mean square residual (RMR) value was 0.071, which was less than the recommended value of 0.08, and the comparative fit index (CFI) value was 0.909, which was more than the recommended value of 0.9, indicating excellent fitness of the model. However, the root mean square error of approximation (RMSEA) and normed fit index (NFI) values did not reach the range suggested by scholars. According to Hair et al. (1998), because the criteria of the fitness indicators are all idiomatic usage by scholars and have not been scientifically verified, only one or two indicators need to be selected for evaluation and analysis, so this research model can be seen as significant.

## 5. Conclusion and Suggestions

Figure 1 shows the results of this study. The estimated path value for somatosensory experience was 1.79 for perceived experience value. The test results show that somatosensory experience had a significant positive impact on the perceived experience value, with $\beta$ = .719, and thus, H2 was accepted. The estimated path value for somatosensory experience is 1.33 for sports attitude. The test results showed that somatosensory experience had a significant positive impact on sports attitude with $\beta$ = .888, and thus, H3 was accepted. The estimated path value of the perceived experience value was .760 for sports attitude. The test results showed that perceived experience value has a significant positive impact on sports attitude with $\beta$ = .773, and thus, H4 was accepted.




*χ 2/df =2.955 GFI =0.91 AGFI=0.82 CFI=0.91*

**Figure 1.** Regression Path Analysis Model

According to the findings above, undergraduate students can effectively predict the perceived experience value in sensory, emotional, thought, action, and relational dimensions. Thus, the better the students' perception of their somatosensory experience, the higher is the relative perceived experience value. Baker & Crompton (2000) believed that satisfaction is the actual experience value after a person experiences an activity, which originates from the link between individual psychological feelings and emotions that are generated after the interaction

between people and the activity site. The results of this study showed that undergraduate students' sense, emotion, and relevance, as well as thehedonic value dimension of perceived experience value, can effectively and positively predict their sports attitudes. The better the students feel in their somatosensory experience, the stronger will be their sports attitudes. This result is similar to those of Yang et al. (2014) who suggested that experience is a key factor to transform into attitude, and relevance is the external and interpersonal interaction that is expressed through the activity of personal experience. Thus, the better the students feel about the experience satisfaction, the better will be their attitudes and beliefs towards sports. Previous research has also shown that perceived experience value has a significantly positive impact on sports attitude (Chen, 2014).

Overall, college students' attitudes towards sports, along with recommendations from relatives and friends, media reports, and the perceived experience value of understanding product features are the main key factors that influenced the model. The verification results showed that sports attitude will be affected by somatosensory experience and perceived experience value, which means that the cognition of sports attitude will be affected by the idea of starting online game experiences and the influence of family and friends on the degree of conformity behavior. This study verified the somatosensory experience and perceived experience value of online games for undergraduate students. According to the regression analysis results, somatosensory experience has a positive impact on the cognition of perceived experience value of college students because online game experiences are mainly affected by personal preference, recommendations from relatives and friends, and media communication, as well as the previous consumption experience, which is consistent with the results of this study.

This study also found that somatosensory experience has a direct impact on sports attitude, and sports attitude is deeply affected by perceived experience value. Thus, the difference in personal somatosensory experience will trigger the performance behavior motivation of participants' continuous sports participation and then affect their decision-making mode. The personal cognition of the perceived experience value is also affected by differences in somatosensory experience, and the final overall evaluation has a direct impact on the behavioral intention of a person's sports attitude. Finally, the model verification results showed that the influencing factors for participants' sports attitudes will vary with their individual lifestyles, but the main factors will have a direct impact on their different participation motivations. The reason might be that online game participants have the experience of similar reference groups in their lifestyles and the added value of diversity compared with other physical product exchanges while participating in relevant sports.

For research suggestions, this study used undergraduate students as the main object. However, according to the results of previous studies, individuals' somatosensory experiences and sports attitudes towards online games are mainly affected by personal preference, recommendations by relatives and friends, and media communication. These results are consistent with the results of this study. In future studies, participants' expectations, possible cognitive differences, and overall perceived experience value can also be taken into account. It has been shown that there is a direct relationship between the perceived experience value of consumption and service quality management (Christy, Oliver, & Penn, 1996), and thus, subsequent studies can take such relevant influencing factors into consideration and explore

the inter-influencing relationship between variables. It is suggested that future studies can compare the differences of conformity behavior and perceived experience value between first-time participants and repeated participants, and also explore whether the conformity behavior and perceived experience value among groups of participants with different lifestyles are affected by word-of-mouth communication.

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