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The Effect of Hearing on Consumer Emotion Experience：The Moderator of Vestibular Sensations

Jianhua Huang [1,a], Kaili Yieh[2,b]

[1,2]National Changhua University of Education 50007, Taiwan, China

[a]kk3564432@kimo.com, [b]kailiy@cc.ncue.edu.tw

Abstract. The field of consumer behavior has always been the goal of marketing concern, a breakthrough in the study, a sensory field in recent years beyond the traditional five senses and the vestibular sensory systems (called the sixth kind of the senses), including body posture and balance, previous research on taste and vestibular sensory interaction affect the major findings, This study will explore the interplay between auditory and vestibular senses and expand the scope of sensory marketing. Join consumers' emotional experience as strain, the study of the interaction between the emotion to provide a reference for future retailers, and vestibular sensory systems in the field of marketing has not been sufficient research, this study through three experiments results show that although the court did not feel a significant interference influence on emotional experience, hearing from them, Vestibular sensory sitting position (relative standing) have higher positive influence to customers' emotional experience, and contains the auditory sense of music presents the fast rhythm, music, the greater the loudness, rock and roll style for customers have higher emotional experience positive emotions, these findings extend the sensory marketing as well as the interactions of the vestibular sense of hearing, To provide retailers, catering and other industries in the future design service area and rest area environment practical significance.

Keywords: sensory marketing; hearing; consumer emotion experience; vestibular system; music; posture.

1. Introduction

In recent years, the retail industry and restaurants are paying more and more attention to customer experience. It is very important for customers to create a good experience and establish an emotional experience in the shopping environment. Studies have found that the auditory sense can arouse customers' emotional responses and generate positive and negative emotional feelings. There is a new trend in Taiwan in 2019, is the stand to eat barbecue, break through the traditional way of dining type switch to eating standing up to have dinner, are now in Asia, Australia, Europe, the United States, and other countries have started to spread the trend, and stood to eat barbecue is also called as "buffet" restaurant, stand the trend of catering, shopping environment is biger and biger, The standing and sitting vestibular sensory system (called the sixth sensory system) is responsible for balance and posture. Biswas et al., (2019) found that the interaction between the vestibular sensory system and the taste was significantly different [1]. To draw a very significant contribution in the field of consumer behavior, but the related research in the field of marketing and consumer behavior has not been fully discussed, if you can be aware of the different hearing systems will be a positive and negative emotional impact on consumers, and the influence of under vestibular sensory systems and associated, will be able to assist retailers are more likely to seize the consumer's heart, therefore, The purpose of this study was to investigate the effect of auditory perception on consumers' emotional experience and to use the vestibular sensory system as the interference effect.

2. Literature reference

2.1 Deduction of hypothesis

2.1.1 Effects of auditory sense and emotional experience

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Background music is the most important auditory and sensory atmosphere in many restaurants. Many studies have found that when customers enter restaurants and listen to different background music, their food choices and emotional feelings will be significantly different. Mufeeth et al., (2020) found that there is a significant difference in music rhythm when customers listen to the music of different rhythms. Fast-paced music leads to the highest satisfaction of customers in terms of pleasure, arousal, and satisfaction [2]. Nacass (2018) can stimulate customers' positive perception of emotional impact by controlling the volume of music and matching the environment. High volume can make customers feel excited and aroused, while low volume can make customers relax and feel comfortable and calm. Therefore, the loudness level of music also stimulates shopping behavior and emotional experience [3]. Different types of music will make customers feel different emotions, when playing classical music type, will let the customer feel elegant and zunjue enjoyment, and can bring customers pleasant emotional experience, and when shopping environment showed the new age, Rock and roll music type, the higher the customer evaluation of the feelings of the shop, music style belongs to low or melancholy, It can also lead to negative emotions in consumers, and such songs (sadness) are also a catalyst for consumers to associate sad situations in their lives (Thind et al., 2020; Michel et al., 2017)[4-5]. In the past, many scholars studied consumer behavior based on the rhythm, volume, and type of music, and found that these three aspects have different research results for consumers' emotional experience. Therefore, based on the above, the following hypotheses are proposed in this study:

H1: Fast (slow) music has a significant positive (negative) impact on consumers' emotional experience.

H3: High (low) music volume has a significant positive (negative) impact on consumers' emotional experience.

H5: Music genre Rock music (classical music) has a high positive (negative) significant impact on consumers' emotional experience.

2.1.2 Vestibular sensory system has interference effect on emotional experience in auditory sense

Angelaki (2008) pointed out that the vestibular sensory system is composed of semicircular canals and otoliasis organs. The transmission of vestibular information to various nerve sources through the central nervous system immediately becomes multi-sensory and multi-modal, and the nonlinear interaction between the otoliasis and the ear canal signals must allow the vestibular system to act as an inertial sensor. Therefore, it is a very important synergistic combination for the auditory sensory system [6]. The overall importance of otolith organs to the whole vestibular system is also shown in that about 70% of all sensory cells in the vestibular system and about 60% of all afferent nervous systems process otolith information. Baloh and Honrubia (2001) [7] In addition, vestibular signals are also very important sensory factors in the brain. The combination of vision, hearing and vestibular senses is necessary for the brain to see clearly and the body to hear the sound, to become a complete reference frame. Thus, the vestibular sensory system is inextricably related to auditory senses, and research has confirmed that posture can also affect consumers' emotions and emotional experience (Aggio et al., 2017; Pena and Chen, 2017) [9-10]. Therefore, based on the above, the following hypotheses are proposed in this study:

H2: The vestibular sensory system (standing and sitting) has a interfering effect on the impact of music tempo on consumers' emotional experience.

H4: The vestibular sensory system (standing and sitting) has a interfering effect on the influence of music volume on consumers' emotional experience.

H6: The vestibular sensory system (standing and sitting) interferes with consumers' emotional experience in different music types.

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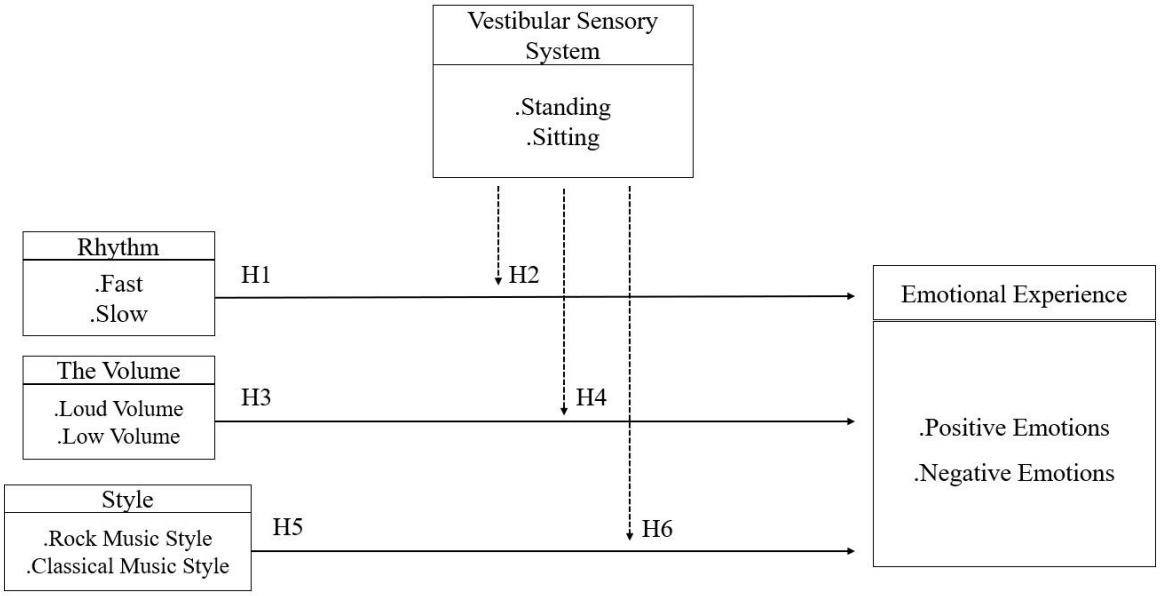
3. Research methods

3.1 Research Framework



3.2 Research Sample

This study choose college students in the Taiwan area as the research object, in exchange for course credit and commodities vouchers as feedback, this research adopts the experimental design is adopted 2 (hearing) x 2 (vestibular sensory) between the subjects of experimental design, experimental design for three, experiments are conducted throughout all anonymously and with class course students as sample collection, In the formal experiment, half of the students in the class were asked to listen to music in standing posture and half were asked to listen to music in sitting posture. In the beginning, about 2 minutes of experimental music was played. At the end of the experiment, the subjects were asked to fill in the questionnaire with a Likert seven-point scale and score points. The independent sample T-test in SPSS was used for hypothesis testing to compare whether the difference between the mean was significant. A total of 541 subjects were recruited in the three experiments, including 36 invalid questionnaires with incorrect answers and missing answers. 505 effective questionnaires were collected with an effective recovery of 93.35%.

4. Research results

4.1 Sample Statistics

In the valid questionnaire of this experiment, males accounted for 51.7%, females accounted for 48.3%; In terms of the distribution of schools, the school of Management occupies the majority, accounting for 47.9%, followed by the School of Arts, accounting for 15.6%, the School of Science, accounting for 14.5%, the School of Engineering, accounting for 9%, the School of Education, accounting for 6.7%, the School of Social Science and Physical Education, and the school of Technology and Vocational Education, accounting for 3.8% and 2.5%, indicating that the sample composition of this study is relatively equal in gender. Most of the schools are students of the school of management.

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4.2 Experiment 1: music rhythm v. vestibular sensory system experimental analysis results

In experiment 1, 128 subjects (male 47.7%; Sit n = 69; Standing n=59), music tempo has a significant impact on positive and negative emotional experience, F value is 21.122, 33.467, respectively, the significance is P =0.000<0.05. By average comparison

When the music in the fast tempo of the experimental situation is compared with the emotional experience of the slow tempo, it will have higher positive emotional impact (M fast tempo = 4.32 v.s M slow tempo =3.56) and negative emotional impact (M fast tempo = 2.46 v.s M slow tempo =3.42), indicating that the positive emotional impact will be a higher in the fast tempo situation. Therefore, the H1 hypothesis is supported.

ANOVA analysis showed that the vestibular sensory system (standing/sitting) did not significantly interfere with the relationship between auditory sense and positive emotion (F=0.094, P =.760>0.05). In terms of the average positive emotions, both standing posture (M fast tempo - standing =4.28 v.s M slow tempo - standing =3.49) and sitting posture (M fast tempo - sitting =4.35 v.s M slow tempo - sitting =3.66) showed higher positive emotions. The relationship between the vestibular sensory system and negative emotion was investigated (F=2.765, P=0.099>0.05). The average negative emotion was compared with the average standing posture (M fast tempo-standing =2.28 v.s M slow tempo-standing =3.54) and the average sitting posture (M fast tempo-sitting =2.58 v.s M slow tempo sitting =3.28). When the vestibular sensory system was used as the interference effect, positive and negative emotions were not significant, so the H2 hypothesis was not supported.

4.3 Experiment 2: Music volume v. experimental analysis results of vestibular sensory system.

In experiment 2, 208 subjects (male 46.6%; Sit n = 101; Standing n=107), music volume had no significant effect on positive and negative emotional experience, with F values of 3.415 and 0.374, respectively, and the significance was P =0.066>0.05 and P =0.541>0.05. Utilizing average comparison, when the experimental music is at high volume, the emotional experience will have higher positive emotion (M loud volume = 4.30 v.s M low volume =4.08) and negative emotion (M loud volume = 2.53 v.s M low volume =2.61) than the emotional experience at low volume. Because the loudness of music has no significant effect on emotional experience, Therefore, the H3 hypothesis is not supported.

ANOVA analysis showed that the vestibular sensory system (standing/sitting) did not significantly interfere with the relationship between auditory sense and positive emotion (F=0.232, P =.63>0.05). From the average of positive emotions, standing posture (M loud volume - standing =4.28 v.s M volume - low volume - standing =4.12) and sitting posture (M loud volume - sitting =4.33 v.s M low volume - sitting =4.05) showed higher positive emotions. The relationship between the vestibular sensory system and negative emotion was investigated (F=1.869, P=.173>0.05). The average negative emotion was compared with standing posture (M loud volume- standing =2.64 v.s M low volume - standing =2.54) and sitting posture (M loud volume - sitting =2.44 v.s M low volume - sitting =2.69). When the vestibular sensory system was used as the interference effect, positive and negative emotions were not significant, so the H4 hypothesis was not supported.

4.4 Experiment 3: Music style v. experimental analysis results of vestibular sensory system

In experiment 3, 169 subjects (male 60.9%; Sit n = 86; Standing n=83), music style (rock music/classical music) had no significant effect on positive and negative emotional experience, F value was 1.560, 0.025, p=.213>0.05, P =.873>0.05. Compared with classical music, rock music had a higher positive impact on emotional experience (M rock music = 4.37 v.s M classical music =4.30) and a higher negative impact (M rock music = 2.64 v.s M classical music =2.75). Therefore, the H5 hypothesis is not supported.

ANOVA analysis showed that the vestibular sensory system (standing/sitting) did not significantly interfere with the relationship between auditory sense and positive emotion (F=.583, P =.446>0.05). From the average of positive emotion, standing posture (M rock - standing =4.26 v.s M classical music - standing =4.27) and sitting posture (M rock - sitting =4.48 v.s M classical music

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- sitting =4.33), and then from the relationship between the vestibular sensory system and negative emotion (F=.732, P=.394>0.05). Standing posture (M rock - standing =2.69 v.s M classical - standing =2.69) and sitting (M rock - sitting =2.60 v.s M classical - sitting =2.83) were compared for average negative emotions. When the vestibular sensory system was used as the interference effect, positive and negative emotions were not significant, so the H6 hypothesis was not supported.

5. Conclusion

The results of the three experiments showed that the vestibular sensory system associated with standing and sitting posture had no significant influence on the emotional experience of hearing. There was no significant difference in standing posture (as opposed to sitting posture) for different auditory senses. The other results from different auditory sensory effects on consumers' emotional experience music fast rhythm (relative to the slower pace) had a higher positive emotion, music volume (small volume) had a higher positive emotion, music, rock music (as opposed to classical) have higher positive emotions, but there was no significant difference between the overall reason does not support the hypothesis.

This is an emerging issue in the field of marketing behavior. Most of the previous literature focuses on the traditional five senses (hearing, touch, smell, taste, and sight). This study will expand the interaction between the sixth sense (vestibular sense) related to posture and hearing. Biswas et al., (2019) found that the vestibular sensation of posture had an impact on body pressure and taste [1]. This study extended this influence to explore the interactive influence on the auditory sense, contributing to the literature related to auditory sense marketing.

This study has an important reference basis for retailers, food and beverage industry, under the conditions of marketing, you need to set up the dining area, or area to provide customer service and so on, results show that the posture of vestibular sense for the customer's emotional experience won't have obvious differences, so retailers can adopt low-cost manner environment Settings, standing rest area or seating area can be set. If customers need to have a deeper positive emotional experience, they can take a sitting posture. Environmental music can use fast rhythm, loud volume, rock type, and other attributes to produce higher positive emotions.

To ensure that the experiment can achieve the best effect, the experiment site is controlled in the classroom. In this study, the interaction between posture and hearing can be evaluated in the actual field. In the experiment, subjects are required to maintain the same posture for feelings. In the future, the alternation between standing and sitting posture can be discussed to explore whether the alternation of posture will affect auditory sensory feelings. This study only focuses on the influence of the vestibular sensory system on the auditory sense, while the interaction of other traditional senses on the vestibular sense has not been fully studied. Therefore, there is a great space for development in this field of marketing behavior. It is hoped that this study will promote the further development of this field.

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