The Influence of Product Image Background Color Tone and Background Music Style on Purchase Intention

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ABSTRACT

Online shopping has become the main way for people to shop. Due to the inability of shoppers to directly touch and truly experience products during online shopping, besides the usefulness and ease of use of products, visual and auditory factors have become important factors in e-commerce that affect people's purchasing tendencies. To explore the impact of music types and product background colors on consumers' purchasing tendencies in online shopping. The study adopts a mixed experimental form of 2 (music style: passionate/soothing) * 2 (background color: cool/warm), and selects the desired products online on the cool and warm tone backgrounds under passionate and soothing music backgrounds. The results indicate that consumers have a higher tendency to purchase product images under soothing music and cool tone backgrounds, and there is no interaction between background music and background tone. This study found a deeper level of aesthetic needs for consumers when shopping online, providing a reference for page design on e-commerce platforms. Merchants can use cool colored product backgrounds and add soothing music, which will help increase their revenue.

KEYWORDS: purchasing tendency; background music; Background tone; Online shopping

1   INTRODUCTION

1.1   Research Background and Purpose

In the rapidly developing modern commercial era, online shopping has become the main consumption mode, and its convenience and massive choices have led consumers to change their shopping habits and orientations. The study of consumer behavior has also become a core issue in the field of marketing. With the increasing complexity of consumer psychology and behavior, sellers on e-commerce platforms are constantly searching for new ways to accurately reach consumers' hearts and influence their purchasing tendencies. How to open up a grand road in the midst of thousands of people crossing a single wooden bridge, ensuring brand recognition and maximizing consumer attraction has become the key to determining whether business can thrive.

The purchasing tendency of consumers is influenced by factors such as observation tendency and cognitive needs (Chao Yu, 2017). In online shopping, consumers' perception of goods is limited in terms of touch, smell, and other aspects. When consumers' purchasing needs are clear and the quality difference of the required goods is not significant, hearing and vision become important factors affecting their purchasing tendency. To enhance consumers' purchasing tendencies on e-commerce platforms, it is necessary to find suitable product page designs to create a good shopping atmosphere for consumers. In this context, music and color, as two important environmental elements, have gradually received widespread attention from marketing experts and psychologists.

Music, as a unique art form, has strong emotional expression and emotional appeal. It can directly affect the human brain, creating different shopping atmospheres and emotional experiences through changes in melody, rhythm, and volume. In recent years, an increasing number of studies have shown that music has a significant impact on consumers' purchasing decisions.

Color is also a visual element that cannot be ignored. Research in color psychology has shown that color can affect people's emotions and emotions, thereby having a profound impact on purchasing behavior. In commercial environments, the application of color is particularly widespread. Through carefully designed color combinations, merchants can not only enhance the attractiveness of their products and stores, but also stimulate consumers' purchasing desire.

In summary, music and color, as two important sensory stimuli in the business environment, have a significant impact on consumers' purchasing tendencies. However, there is currently insufficient research on how music and color work together in consumer purchasing decisions. This article studies the impact of different music styles and background tones on consumer purchasing tendencies, aiming to explore how music and color synergistically affect consumers' purchasing tendencies, in order to enrich the theory of the impact of background music and background tones on consumer purchasing tendencies in online shopping. In practice, on the one hand, it provides more accurate and effective marketing strategy suggestions for businesses, improves their revenue, and promotes social and economic development; On the other hand, it satisfies consumers' deeper aesthetic needs in online shopping and enhances people's sense of happiness.

1.2 Background Music Style and Purchase Intention

1.2.1 Definition of background music style

Music style refers to the combination of elements such as melody, rhythm, timbre, and tone in a musical work. This study mainly defines music style based on music rhythm and subjective perception of music. Researchers usually classify music rhythm into two categories: fast and slow, based on the size of BPM (Beats Per Minute). BPM represents the numerical value of the music beat per minute, and the larger the value, the faster the rhythm. Referring to the research of Milliman and Wu et al., music rhythms are divided into fast rhythms with a BPM of 94 or above; If the BPM is below 72, it is considered slow paced. Soothing music has a slower rhythm, a gentle melody, and a lower tone, giving people a relaxed and peaceful feeling; Exciting music has a fast rhythm, intense melody, and high pitch, giving people a passionate feeling.

1.2.2 Music style and emotion

The relationship between music and emotions has been continuously studied since ancient times. In the Chinese music theory work "Records of Music", it has been mentioned that music conveys emotions and emotions through sound. "Every sound originates from the human heart. When the human heart arrives, things make it natural. Feeling moves with things, so it takes shape in the sound." and "Musicians, where sound originates from feeling with things, it is also reflected in psychology's research on music and emotions. The study of the psychological function of music can be traced back to the experimental psychology school in the early 19th century. They are mainly committed to exploring the interaction between music and human sensory perception. But it was not until the early 20th century that the independent research field of pleasure psychology was officially established. Cognitive theorists represented by Kivy (1990) emphasize that emotions in music are transmitted from the creator to the audience, and they believe that the audience can perceive the emotions expressed by the music while listening without specific emotions. However, scholars Thompson and Robotaille found that listeners are good at perceiving the emotions that composers want to express. In summary, music can clearly trigger emotions in the audience.

The results of the experiment showed that these musicians showed considerable accuracy in identifying emotions in music, as they were able to capture various emotions contained in the music, further proving the professional competence and sensitivity of musicians in music emotional perception (Kotlyar&Morozov). Further research has found that the perception of emotions is essentially subjective, so people's perception of the same music is different (Yang, 2006). Some scholars believe that the discovery and perception of emotions in music by listeners may not necessarily depend on the listener's true emotional feelings. They believe that this is the essence of perceiving music emotions (Barbara, 2009). In addition, more research has been conducted on the relationship between non classical and classical music and the emotional experience of college students (Ching Fang Huang, 2007). The results indicate that listening to classical music can create a more solemn and positive emotional experience for college students. In addition, Huang Weiping found in his 2007 study the complexity and individual differences in the relationship between music and emotions.

1.2.3 The impact of background music style on purchasing intention

Advertising music and classical conditioning theory. Scholars have studied the relationship between advertising music and purchasing behavior, and the results show that inserting advertisements with music during the purchasing process of products that consumers can decide whether to purchase without deep thinking can enhance consumers' willingness to purchase. However, to achieve this effect, music must be played repeatedly (Alpert, 1989).

The role of music in shopping situations. Many foreign researchers have conducted in-depth research on music rhythm to reveal the impact of playing music on consumer purchasing behavior in actual purchasing situations. Researchers have found that sales in supermarkets and restaurants are higher than usual when playing slow paced background music (Milliman, 1986). Some people explain this phenomenon and believe that the reason for this effect is because slow paced music gives people a sense of relaxation. In this relaxed atmosphere, consumers are more likely to linger in the mall for longer periods of time, leading to a stronger likelihood of purchasing (Caldwell&Hibber, 2002).

The role of information in the shopping context. The main purpose of inserting music into advertisements is to establish a connection between music, advertising, and the products involved in the advertisement. Afterwards, as long as consumers hear the music, they can think of the advertisement and product. However, there are certain requirements for music selection, and not all music can achieve this goal. Therefore, connection plays an important role.

1.3 Background Warm-cool Tone and Purchase Intention

1.3.1 Definition of warm and cold tones

In the field of product marketing, colors are often divided into warm and cold tones. Research suggests that red is the representative of warm tones, while blue is the representative of cool tones (Bellizzi&Hite). Red not only reminds people of warmth and enthusiasm, but also reminds individuals of mistakes, impulses, and so on. Blue evokes associations with science fiction, rationality, or indifference, insignificance. Other studies both domestically and internationally have identified red as a representative of warm tones and blue as a representative of cool tones.

1.3.2 Color and emotion

In the 19th century, German physiologist Herring proposed the psychological color theory. Subsequently, in the mid-20th century, Rudolf Arnheim organically integrated the study of color psychology into the grand system of visual and perceptual psychology in his two important works "Art and Visual Perception" and "Psychology of Visual Images", delving into how shape and color work together in human perception processes. In 1969, Japanese colorist Chongshun Kobayashi further promoted the development of color studies and established the field of color and design research.

1.3.3 The impact of warm and cold color tones on purchasing tendencies

A survey shows that consumers may not realize that they are influenced by color in their actual shopping behavior, but color itself is an important factor affecting consumer choices in shopping (Grossman Wiseblit, 1999).

Experimental studies have found that colors in shopping malls have an impact on consumers (Beltizzi et al., 1983). The experimental results show that although consumers tend to be closer to those who belong to warm colors, in actual warm color situations, consumers' emotions are not pleasant, but instead have a more positive emotional experience in cold colors. Research has also found that tones that bring a sense of relaxation can increase simulated purchases, reduce purchase delays, and have a stronger interest in browsing products (Michael, 2013).

Researchers believe that in cognitive tasks that require attention to detail, subjects under the background of red shopping perform better, while those under the background of blue shopping perform better in cognitive tasks related to creativity. This may be related to red inducing avoidance motivation tendencies, and blue inducing intimacy motivation tendencies (Mehta&Zhu, 2009). The research results indicate that when the background of a shopping webpage is in a warm color tone (such as red), consumers tend to be more self interested and will decide whether to purchase the product from their own perspective. Moreover, under a warm color background (such as red), consumers will have higher arousal levels and stronger aggressiveness "(Bagchi&Cheema, 2013). The research results also prove that in several marketing models, exploring the impact of red and blue colors on consumers' purchase intention, the research shows that the level of willingness of consumers to pay is mediated by their competitiveness. Red is more likely to arouse buyers' arousal emotions than blue, and arousal can induce consumers' competitiveness.

The research results on the impact of warm and cold color tones on consumer behavior are constantly enriching, but most of these studies are mainly conducted abroad, with relatively few studies conducted domestically. Moreover, in numerous studies, researchers have inconsistent views on the impact of background color on consumer purchasing behavior.

1.4 Interactive Effects of Music and Color on Purchasing Tendencies

Color music synesthesia: Among numerous studies on synesthesia, "color listening" synesthesia is the most common form, where the stimulation of color can trigger auditory experiences. In recent years, researchers both domestically and internationally have attempted to study the physical properties between color and music, as well as the matching degree of pitch and hue, as well as the matching degree of timbre and saturation. In the study of music color synesthesia, researchers have found that participants are often influenced by the type of instrument and personal emotions during the process of being asked to choose the corresponding color when appreciating music segments.

In the 17th century, physicists studied the interaction between these two art forms. For example, Newton made a detailed comparison between these colors and the tonality in music in his experiments on color and light in physics, suggesting that there may be some deep-seated connections between the two. Based on Newton's research on the cross sensory forms of music and color, more and more scholars are starting to conduct related research on the two. Famous psychologist Ginsburg conducted a deeper analysis. Unlike Newton, he used the piano as a reference and observed a gradual transition from bass to treble, like a delicate transition in color from black brown to deep red, and then to gray and silver gray. This viewpoint not only reveals the potential connection between music and color, but also indicates that as early as ancient Greece, people had recognized the profound impact of tone on emotions. In summary, from Newton's physics experiments to Ginsburg's psychological analysis of music and

color, we can easily find complex connections between tone and color, as well as between music and emotions. In history, German scholar Michel, as a pioneer in linking music and color, proposed a viewpoint that broke the boundary between art and science: "Music is an imitation of light, and the two can express each other." This theory not only enlightens us, but also reveals the deeper internal connection between music and color, laying the foundation for future research. In 1720, French scholar Louis Castler explored the correspondence between sound and spectral color, and compared the two in detail according to a certain proportion. In 1863, German physicist Helmholtz cleverly incorporated psychological perspectives into the study of Western music aesthetics in his work "The Theory of Sound Sensation as the Physiological Basis of Music Theory", injecting new vitality and thinking into the field of musicology. After entering the 20th century, abstract art pioneer Vasily Kandinsky deeply analyzed the inherent spiritual logical relationship between non object painting and pure music in multiple works, injecting new vitality into the integration of art and psychology.

The basic theory provides us with a basis for classifying different music rhythms and styles in our research, as well as a classification method for warm and cold tones in colors, providing a basis for material preparation for the experiment. At present, research on the interaction between music and shopping intention, color and purchasing intention, and color and music has been quite complete both domestically and internationally. However, this study adopts a unique perspective to examine the relationship between product display pages and music and color tones. In previous studies, the impact of researchers on consumers often focused on offline (such as physical stores and shopping malls), while there was relatively little research on online shopping. This article explores the impact of product display background tones and background music on consumers' purchasing tendencies during online shopping from an innovative perspective. And the research conclusions drawn can be applied to various e-commerce, shopping platforms of all sizes, and even all consumer platforms, providing better design and decoration strategies for merchants and platforms, while also bringing a better shopping experience to consumers.

2 DATA SOURCES AND METHODS

2.1 Research Subjects

Taking online consumers as the research object, a total of 214 questionnaires were published and collected through the Questionnaire Star platform. After excluding invalid questionnaires such as long or short duration, 152 valid questionnaires were ultimately collected, with an effective response rate of 71.03%. Among them, there are more women than men, and the sample data is mainly from those born in the 2000s. There are 131 people aged between 18 and 25, accounting for 86.2%; There are 119 consumers with a bachelor's degree, accounting for 78.3%. Perform frequency analysis on demographic variables such as gender, age, education, etc. Detailed subject information is shown in Table 1:

Table 1 Basic information of subjects (N = 152)

Name	Options	Frequency	Percentage (%)	Cumulative percentage (%)
Gender	Male	35	23	23
	Female	177	77	100
Age	Under 18 years old	5	3.3	3.3
	18-25 years	131	86.2	89.5
	26-30 years	1	0.7	90.1
	31-40 years	2	1.3	91.4
	41-50 years	10	6.6	98.0
	51-60 years	2	1.3	99.3
Academic qualifications	Junior high school and below	6	3.9	3.9
	High School/Technical Secondary School	14	9.2	13.2
	College	11	7.2	20.4
	Undergraduate	119	78.3	98.7
	Graduate and above	2	1.3	100.0

2.2 Research Materials

2.2.1 Experimental materials

Music materials: According to previous theories, researchers usually classify music rhythms into two categories: fast and slow, based on the size of BPM (Beats Per Minute). BPM represents the numerical value of the music beat per minute, and the larger the value, the faster the rhythm. Referring to the research of Milliman (1986) and Wu (2008), music rhythm is divided into fast rhythms with a BPM of 94 or above; If the BPM is below 72, it is considered slow paced. Therefore, in the music materials set up, there are two songs used for different music styles, and the selected music is niche pure music. Try to exclude the influence of lyrics and song familiarity on the participants. The soothing music material BPM is 71 and the tone is Db; The passionate music material BPM is 127 and the tone is E.

Image material: According to previous research, red represents warm tones, while blue represents cool tones (Bellizzi and Hite). Therefore, the background tones of 8 sets of product images were adjusted on the retouching software, and the color temperature values were adjusted. The final warm tone group mainly appeared as reddish and orange; The cold tone group mainly appears as a blue and green color. All product images do not have any brand identification and are mainly for daily necessities, such as suitcases, tissues, mugs, etc.

2.3 Experimental Procedures

This experiment is divided into three groups. The first group of experiments has two independent variables: background color, cold tone background image, and warm tone background image; The independent variable of the second group of experiments is the type of music at the time of purchase, at two levels: soothing music and passionate music; The third group of experiments is a 2 * 2 level experiment, with the first independent variable being the background tone type and the second independent variable being the music type at the time of purchase.

Unrelated variable control: In the first group of experiments, there was no music, while in the second group of experiments, the background color was neutral.

Dependent variable measurement: The first and third groups of experiments used a two-point scale, while the second group of experiments used a Likert five level scale. The integers 1-5 in the options represent "very unwilling to buy, not wanting to buy, average, wanting to buy, very wanting to buy".

3. RESULTS

3.1 Descriptive Statistical Analysis of Each Variable

(1) Descriptive statistics on music preferences, whether attention is paid to playing music during shopping, etc.: The results in Table 2 show that in the dimension of "slow paced and soothing pure music meets music preferences", the average rating of consumers is 3.72, which is relatively high, indicating that consumers have a preference for slow paced and soothing pure music. In the dimension of "fast paced and passionate pure music in line with music preferences", the average rating of consumers is 3.32, which is relatively high, indicating that consumers also have a preference for fast paced and passionate pure music. In the dimension of 'noticing music played during shopping', the average rating of consumers is 3.46, which is relatively high, indicating that consumers have a higher tendency to pay attention to the music background during shopping. In the dimension of 'thinking that background music in offline and online stores affects their purchasing desire', the average rating of consumers is 3.32, indicating that music has an impact on their purchasing desire. In the dimension of "choosing cool tones without music", the average rating of consumers is 4.5724, which is relatively low, indicating that the population has no significant tendency towards cool and warm tones without music. Please refer to Table 2 for details.

Table 2 Descriptive statistics

	Average value	Standard deviation
Slow and soothing pure music fits the musical preference.	3.72	.887
Uptempo, exciting pure music is in line with musical preferences.	3.32	1.045
Noticed the music playing while shopping	3.46	.905
Think that the background music of offline and online stores	3.32	.999

affects their desire to buy.

	M	SD
Choice of cool tones without music	4.572	1.952

(2) Descriptive statistics on consumer purchasing tendencies under the combined effects of different background tones, music, and color tones of products: Descriptive statistics on purchasing tendencies show that consumers have stronger purchasing tendencies towards products with a cold background color tone (M=4.572, SD=1.968) under different conditions of cold and warm background colors.

According to the descriptive statistics, when the background music is soothing and the background color is cool, the purchase intention score (M=4.592, SD=2.368) is found; When the background music is soothing and the background color is warm, the purchasing tendency score is (M=3.408, SD=2.368); When the background music is passionate and the background color is cool, the purchasing tendency score is (M=4.487, SD=2.353); When the background music is passionate music and the background color is cool, consumers have a stronger purchasing tendency score (M=3.513, SD=2.353). Therefore, when the background music is soothing music and the background color is cool, consumers have a stronger purchasing tendency. Please refer to Table 3 for details.

Table 3 Descriptive statistical results of consumers' purchase tendency under different background tones, music and tones

	M	SD
Cool colors	4.572	1.968
Warm colors	3.428	1.952
Soothing music and cool colors	4.592	2.368
Soothing music and warm colors	3.408	2.368
Exciting music and cool colors	4.487	2.353
Exciting music and warm colors	3.513	2.353

3.2 Analysis of Differences in Purchase Tendency in Music Types

Using independent sample t-test to analyze the differences in purchasing tendencies of different types of background music, it was found that there were no significant differences in consumer purchasing tendencies among different types of music (t=-0.823, p=0.895>0.05). The research results are shown in Table 4.

Table 4 Difference of buying tendency in different styles of background music

	Type of music	M	SD	t	p	η^2
Purchase propensity	Soothing	24.22	4.961			
				-0.823	0.895	0.002
	Passionate	24.69	5.075			

3.3 Analysis of Variance for the Interaction between Background Music and Background Tone Combinations

Perform a 2 (music type: soothing vs. passionate) * 2 (background tone: cool tone vs. warm tone) repeated measurement analysis of variance on purchasing intention.

Repeated measurement analysis of variance on purchase intention showed that the main effect of background color was significant, with F (1151)=12.633 and p=0.001. There was a significant difference in the purchase intention of participants under different background colors of cool and warm (P=<0.01)。However, the interaction effect of background music style and background tone was not significant, F (1,151) = 0.230, p = 0.653. Because the questionnaire collected in this experiment is based on the background of different styles of music, The purchase tendency of goods with different background tones is chosen, so the data assignment can not take into account the music style. Therefore, the relevant data is blank. According to the t-test in Table 4, when the music styles are inconsistent, the difference in purchasing intention is not significant. Details are shown in Table 5.

Table 5 ANOVA results of purchasing intention under different combinations of background music styles and background tones

	SS	df	M	F	p	η2
Background tone	176.947	1	176.947	12.633***	.001	.077
Music Style * Background Tone	1.684	1	1.684	.230	.653	.001

Note: * * * means $p < 0.001$

4. DISCUSSION

4.1 Cold Tone Product Backgrounds Can Better Promote Purchasing Tendencies

This study found that consumers have a stronger purchasing tendency towards products with a cool background color when the background color is different from a warm background color. This is consistent with the results of the impact of colors in shopping malls on consumers (Beltizzi, Crowley and Hasty, 1983). The experimental results show that although consumers tend to be closer to those who belong to warm colors, in actual warm color situations, consumers' emotions are not pleasant, but instead have a more positive emotional experience in cold colors. Although this study did not delve deeper into the psychological and emotional experiences of consumers choosing cold tones, it provides data support for consumers' tendency to choose cold tones. It is worth noting that color control in shopping malls is mainly controlled through lighting cooling and warmth, as well as storefront decoration design. However, this study focuses more on the study of the background color tones of individual or overall products, which may amplify the impact on consumers' emotions when selecting products, thereby affecting their consumption behavior.

In addition, according to a study by Yu Ao et al. in the journal Science and Technology Wind, high saturation and high brightness colors are eye-catching and very eye-catching. However, staring at them for a long time can easily cause fatigue for viewers. However, appropriately lowering saturation and brightness makes people feel very advanced. Low saturation and low brightness colors can make people feel very comfortable. This is consistent with our experimental conclusion. When conducting online shopping, consumers spend relatively short average time browsing each product, and the discomfort caused by high saturation warm color backgrounds is relatively light. The advantage of low saturation cold color backgrounds is not very obvious. Therefore, consumers tend to

buy products with cool backgrounds more strongly than products with warm backgrounds.

4.2 Background Music Type has no Significant Impact on Purchase Intention

The results of this study show that there is no significant difference in the purchase intention of different types of background music when the background color of goods is neutral. Although no music genre was found to be more effective in promoting consumers' purchasing tendencies in this study, it does not mean that different music genres combined with other factors such as background color have no effect on consumers' shopping tendencies. Barbara et al. (2009) argue that the discovery and perception of emotions in music by listeners may not necessarily depend on the listener's true emotional feelings. They believe that this is the essence of perceiving music emotions. Therefore, music can change the emotional essence of listeners, and emotions to a certain extent affect consumer behavior. Therefore, more in-depth research is needed on how music increases consumer tendencies.

This study also found that both slow paced and soothing pure music and fast paced and passionate pure music have high music preferences among consumer groups, which is consistent with Huang Weiping's 2007 study that found the complexity and individual differences in the relationship between music and emotions. However, research abroad has found that the sales of supermarkets and restaurants are higher than usual when playing slow paced background music (Milliman, 1986), explaining that slow paced music gives people a sense of relaxation. In this relaxed atmosphere, consumers are more likely to linger in the mall for longer periods of time, leading to a stronger likelihood of purchasing (Caldwell and Hibber, 2002). However, this study did not find that slow paced and soothing background music can increase consumers' shopping tendencies, which may be due to the lower impact of online shopping on consumers' music experience compared to offline shopping malls. Further research is needed.

4.3 The Interaction Effect between Background Music Style and Background Tone is not Significant

This study shows that when the background color is cold, consumers have a stronger purchasing tendency, and there is no significant interaction effect between the color tone of background music and the type of background music. Although most of the experimental materials used in this study are practical products, this is not consistent with the results of the study (Zeng Yulu, 2018). Its result is that when the background music rhythm is slow, consumers' willingness to purchase practical products is higher than that of hedonic products. The reason may be that the latter plays music in a shopping mall environment, and in relatively noisy environments, consumers tend to focus a portion of their attention on the background sound. However, when shopping online, the environment where music is played is quieter, making it easier for consumers to focus and ignore the background music, resulting in the ineffective use of background music. But in a soothing style of background music and a cold tone purchase environment, consumers have a stronger purchasing tendency.

5. CONCLUSION

5.1 Conclusion of this Study

Online shopping has become the main way for people to shop. Due to the inability of shoppers to directly touch and truly experience products during online shopping, in addition to the usefulness and ease of use of products, visual and auditory factors have become important factors in e-commerce that affect people's purchasing tendencies. To explore the impact of music types and product background colors on consumers' purchasing

tendencies in online shopping. The study adopts a mixed experimental form of 2 (music style: passionate/soothing) * 2 (background color: cool/warm), and selects the desired products online on the cool and warm tone backgrounds under passionate and soothing music backgrounds. The results indicate that: (1) Consumers have a stronger tendency to purchase products with a cool color background than products with a warm color background. (2) There is no significant difference in the purchasing tendency of consumers in different types of background music and neutral background color purchasing environments. (3) In the purchasing tendency, the interaction effect between background music style and background color tone is not significant. But in a purchasing environment where the product background image is in a cool tone and there is a soothing style of background music, consumers have a stronger purchasing tendency.

5.2 Enlightenment

This study explores the differences in consumer purchasing tendencies under different styles of background music and different shades of background color purchasing environments. This experiment has important practical significance. With the improvement of material life, people's demand for shopping experiences is also gradually increasing. In order to attract consumers and increase sales, businesses can choose appropriate background music and colors based on the characteristics of the product and the preferences of target consumers to create a specific shopping atmosphere, thereby increasing sales. For example, this experiment shows that it is possible to try playing more soothing types of music and designing cool tone product background images to enhance consumers' purchasing tendencies.

5.3 Innovation

This study adopts a unique perspective to examine the connection between product display pages, music, and color tones. In the past, research on consumer shopping mainly focused on offline perspectives (such as physical stores and shopping malls), while there was relatively little research on online shopping and less attention was paid to the impact of background music and background cool and warm colors. This article innovatively studies the background color of product display on product detail pages during online shopping and the impact of background music on consumers.

5.4 Research Limitations and Prospects

This study combines questionnaires and experiments to explore the effects of changing the type of product background color tone and the type of music during purchase on the purchase intention of participants. It has certain theoretical and practical significance, but there are still the following shortcomings. It is hoped that further research will be conducted in the future.

Firstly, the impact of individual preferences for color and music type on the experiment was not ruled out, and the impact of individual perception thresholds for color and music type was not ruled out. Further research is needed in subsequent experiments. However, due to time constraints, this experiment used guidance language to control the influence of unrelated variables, which resulted in insufficient control of the variables. Secondly, there are only 152 valid data in this study, and the subjects are mainly female students and college students. There is an uneven distribution of male and female sample proportions, and the age group is not widely available, which has a certain impact on the applicability of the results. In addition, some studies have found that the sales of

supermarkets and restaurants tend to be higher than usual when playing slow paced background music. However, this study did not find any impact of background music on purchasing tendencies, possibly due to differences in experimental environments where the former is offline and the latter is online, resulting in differences. Finally, although this study combined questionnaire and experimental results for SPSS data analysis to provide certain materials and data support for the purchase intention of the subjects' products based on the types of product background tones and music types during purchase, its more complex psychological principles and specific application in actual online and offline consumption scenarios still need further research. Future research can fully utilize high-tech technologies, such as VR, to simulate realistic purchasing environments for the subjects, in order to avoid certain interference factors.

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