

Application of Visual Psychology in Personalized Sports Industrial Design

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Abstract

This research investigates the application of visual psychology to the industrial design of personalized sports equipment. Based on the development of customized sports art fitness public service products, this study analyzed the physiological and visual psychological characteristics of children, adolescents, middle-aged, and elderly individuals at different age stages. 100 questionnaires were disseminated to fitness enthusiasts for this study, and 92 were returned for a recovery rate of 92%. The findings of this study indicate that public service products of sports art fitness should be designed with diverse age groups in mind. Based on the empirical evidence, the findings of this study are novel. Additionally, this research has both theoretical and practical implications. To improve the corpus of knowledge pertaining to students' psychological well-being, scholars should follow the future directions of this research in future investigations.

Keywords: Visual psychology, individualization, sports industrial design, application

1. Introduction

The primary function of color in human existence is to enhance the aesthetic appeal of visual performance. Moreover, color is the most crucial element of contemporary industrial design, and reasonable and effective use of color can serve as a good decoration for the entire industrial products and improve the product image's performance characteristics, attracting more consumers. Increase human product cognition (Williams et al., 2021; Wu & Li, 2020). For modern industrial product design, a good color composition can not only enhance the recognition of consumers and leave a strong impression on them, but it can also result in repetitive product consumption.

When people recognize new things, the color characteristics on the product's surface can often make the product's overall appearance extremely appealing, significantly highlighting the personalized features of industrial products (Son & Williams, 2023). Moreover, color influences human emotions and psychology and has a very apparent stimulating effect. Furthermore, it has a very evident impact on the alterations of human emotions, as the use of color can have a powerful visual effect on humans and has the most direct influence on emotional cognition and behavior. Similar experiments on color demonstrate that if people use different colors in various products and environments, human victory and psychological characteristics will vary to varying degrees (Williams & Son, 2022). Typically, the psychological effects of color on humans are imperceptible, influencing the human mood, spirit, and other aspects imperceptibly. The same green leaf will produce various mood variations in humans. Red excites humans, whereas blue is frigid and

calm, and so on (Henderson, Mazodier, & Sundar, 2019). Good color coordination will give the concluding touch to the application of the product, making it more prominent and attracting more attention. A beautiful color has an excellent beautifying and decorative effect, which can elevate people's spirits. A strong color composition can enhance the perception and appeal of an image and also improve people's memory to some extent (Gaurav, Ray, & Sahu, 2020). A strong color composition can increase people's recognition and resonance with the human body and enhance the product's individuality and characteristics. (Tien, Vu, & Tien, 2019) Color can stimulate and influence people's emotions and affect their feelings and actions by influencing their vision. Scientists have demonstrated that a person's psychological and physiological responses vary based on the environment's color. Not only can color communicate ideas, but it can also simplify very esoteric or complicated concepts to a level that people can comprehend. Red, for instance, can convey a festive or threatening atmosphere. In recent years, as China's economic level has continued to rise, so has the quality of its public sports services and the demand for social sports public services (Gordon et al., 2021). Square dance, line dance, sports dance, and several sports and arts initiatives have risen to the top of the list for national fitness. Based on the development of personalized sports art and fitness public service products, this study investigates the physiological and psychological characteristics of infants, adolescents, middle-aged, and senior citizens about visual psychology. The findings of this study are novel in the academic literature because no other study has examined this relationship in such depth. Consequently, the research findings have crucial theoretical implications for the field

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of study. In addition, the results of this study have practical implications that can be applied to visual psychology practice. However, this research has some limitations that must be addressed in future investigations.

2. Literature Review

Color can significantly impact people's vision and psychology, and people classify colors into cold and warm categories. Blue, for example, induces a sense of coolness and rationality in the heart, according to [Son and Williams \(2023\)](#). Warm colors can affect a person's mood, as well as the body's pulse and blood pressure. Since red is the representative color of warm colors, people who see red will experience a generous, joyful mood. It can be concluded that color has psychological and physiological effects on humans ([Williams & Son, 2022](#)). In industrial design, taking advantage of these hues' ability to attract and benefit consumers is reasonable.

[Henderson et al. \(2019\)](#) investigate the relationship between music timbre and visual color using various experimental methods and technical tools, including experimental psychology and auditory information processing. The innocence and romance of children and adolescents, the youthful vitality, sunshine, and fashion, and the aesthetic and fascinating artistic features of middle-aged people should also be incorporated into the

product designed to increase the artistic and substantial appreciation of fitness products, thereby enhancing the product's overall quality ([Gaurav et al., 2020](#)). In the design of personalized sports industry products, the physiological, visual, and psychological characteristics of different ages must be taken into account, as well as the choice of music style, the overall structure of the movement, the control of the number of movements beats, the difficulty of the whole set of movement, and the intensity of the entire movement ([Tien et al., 2019](#)).

[Figure 1](#) illustrates the fundamental psychological framework. At the level of human vision, color can substantially enhance the visual appeal of objects. The effective use of color composition can rapidly capture the interest of consumers. Furthermore, color enhances individuals' capacity for recognition and memorization. Therefore, the color scheme is appropriate. It can facilitate the accurate recognition of products among similar items and stimulate consumers' memory, thereby stimulating consumption. When consumers first see a product, its color is more remarkable than its shape ([Gordon et al., 2021](#)). To emphasize the uniqueness of industrial products, the manufacturer should focus on selecting appropriate colors, which are more important than other factors ([Yu, Xie, & Wen, 2020](#)). Additionally, color can stimulate consumers' emotions and directly influence their feelings and behaviors.



Figure 1. Basic Psychological Framework

However, the survey revealed that there are still numerous issues between the supply and demand of such public service athletics products. Color composition refers to the process of creating new color effects by using people's feelings and experiences of color, transforming different colors into essential elements through chemical analysis, applying their changing characteristics in quality and space, and combining them following laws ([Uhm et al., 2022](#)). Indeed, the color composition is closely related to human visual psychology; for modern industrial production, most goods are sold in the same category; therefore, the color design must be used to demonstrate

uniqueness and differentiate products. Consequently, our scientific application of color composition and visual psychology in industrial design can increase the value of products and boost sales. Furthermore, the use of color has a very apparent stimulating effect and a pronounced effect on the emotional states of humans.

The use of color has the most direct influence on people's affective cognition and behavior ([Yun, Rosenberger III, & Sweeney, 2021](#)). Color experiments can demonstrate that their psychological and victorious characteristics will vary when people use different colors in various products and environments. The influence of color on human

psychology typically operates imperceptibly and affects human emotions, spirits, and other aspects imperceptibly (Valipour & Sayary, 2019). The same green leaf will affect distinct moods in humans. Red will further stimulate people, whereas blue will calm and cool them down. Humans' color concepts and visual psychology have undergone substantial transformations due to society's ongoing development in multiple facets. The two will have a significant bearing on human psychology, physiology, and other fields, as well as on one another.

People's fundamental perception and experience of color is the interaction between colors, which is the composition of color (Wang et al., 2023). Humans will respond differently to various hues' visual stimulation and psychological cues. According to the law, designers will use the variation of color in quality and space to create a new color during the design process (Dubinsky, 2019). In the sales of industrial products, similar products must be differentiated and divided based on their color design (Asadollahi et al., 2020). Consequently, the effective use of color in industrial design can enhance the overall value of products and subsequently increase their sales volume.

Moreover, the continuous development of society, via the role of various factors, promotes significant changes in the color concept, visual psychology, and other aspects of human behavior (Jeon, Han, & Nam, 2020). Moreover, these two psychological, physiological, and other human elements will strongly correlate and significantly impact one another. Therefore, when the industrial design of the color composition, visual psychology, and other related theoretical knowledge is thoroughly applied, industrial products can be effectively redesigned following human psychological and physiological characteristics (Yağız, 2020). In addition, the image colors can effectively convey the extraordinary visual impact of human appeal.

The use of color can elicit physiological and psychological responses from consumers (Won & Lee, 2020). People's physiological reactions to color are frequently comparable. As red is typically prohibited in the bedroom due to its adverse effects on the room's atmosphere, it isn't easy to establish a conducive sleeping environment. However, cold drink stores frequently use cool colors on their walls to evoke a sense of coolness in customers (Geurin, 2020). Moreover, consumers' product selections will be psychologically influenced by color. People's emotions and behaviors can be influenced subtly by color. And psychology frequently affects the color preferences of specific consumers (SEONG, 2021).

In contrast, women prefer warm colors, whereas men prefer cool ones. If we add black to a specific color, male preference will increase. Based on this investigation, we develop the following hypotheses:

Hypothesis 1: There is a relationship between visual psychology and personalized sports for children.

Hypothesis 2: There is a relationship between visual psychology and personalized sports for youth.

Hypothesis 3: There is a relationship between visual psychology and personalized sports for middle-aged.

Hypothesis 4: There is a relationship between visual psychology and personalized sports for old people.

3. Methods

A questionnaire has been devised for this study based on the Likert scale. The Likert scale is extensively utilized in social science research. The scale development process was exhaustive, and questionnaire development was preceded by the operationalization of variables based on a literature review. The questionnaire was divided into a pool, and measurement items for each scale were created. This study developed scale items and gathered data from respondents for preliminary analysis to determine the questionnaire's validity. The data are collected and evaluated for exploratory and confirmatory factor analyses. The findings indicate that the questionnaire developed through research has adequate validity. In addition, the face validity of the devised items was evaluated, and experts confirmed that they were suitable for data collection. Following the fundamental requirements of the questionnaire survey method, seven expert questionnaires were distributed, and seven were returned for an effective recovery rate of one hundred percent. In addition, 100 questionnaires were distributed to fitness enthusiasts, of which 92 were produced for a recovery rate of 92%. Experts were asked to evaluate the reliability and validity of the questionnaire, which demonstrated that its design and results were highly reliable and valid. Smart PLS 3.0 was utilized for data analysis and findings of measurement and structural model assessments in this study.

4. Results and Analysis

The normality of the data is examined to determine whether the research's conclusions are appropriate. Indeed, the normality of data assists in recognizing that the research data is beneficial and acceptable for future investigations. The findings of normality are examined by analyzing the skewness and kurtosis values. The acceptable range for skewness and kurtosis is between -1 and +1 (Royston, 1992). The data presented in Table 1 demonstrated that this study had attained high data normality. Additionally, the missing values were examined, and the results showed no missing values in the research data. In this fashion, the data from this study are helpful for further research analysis.

Table 1*Data Normality*

Items	No.	Missing	Mean	Standard Deviation	Excess Kurtosis	Skewness
VP1	1	0	4.091	1.040	0.845	-1.153
VP2	2	0	3.591	1.124	-0.213	-0.589
VP3	3	0	3.971	1.066	0.160	-0.880
VP4	4	0	3.942	1.020	0.157	-0.811
VP5	5	0	3.438	1.136	-0.442	-0.414
VP6	6	0	3.576	1.135	-0.486	-0.489
PSC1	7	0	3.576	1.206	-0.552	-0.547
PSC2	8	0	4.449	0.948	2.946	-1.852
PSC3	9	0	4.196	1.059	0.861	-1.263
PSC4	10	0	3.982	1.175	0.378	-1.097
PSC5	11	0	4.054	1.180	0.465	-1.171
PSY1	12	0	3.913	1.155	0.035	-0.923
PSY2	13	0	4.043	1.138	0.453	-1.124
PSY3	14	0	4.105	1.087	0.866	-1.232
PSY4	15	0	3.75	1.279	-0.476	-0.755
PSY5	16	0	3.649	1.211	-0.495	-0.628
PSM1	17	0	3.975	1.054	0.264	-0.900
PSM2	18	0	4.033	1.012	0.488	-0.972
PSM3	19	0	3.993	1.043	0.611	-1.008
PSM4	20	0	4.029	1.066	0.580	-1.068
PSM5	21	0	3.949	1.128	0.387	-1.011
PSO1	22	0	3.768	1.131	0.008	-0.803
PSO2	23	0	3.848	1.138	0.169	-0.913
PSO3	24	0	4.036	1.160	0.551	-1.162
PSO4	25	0	3.725	1.105	-0.191	-0.653
PSO5	26	0	3.793	1.128	-0.142	-0.774
PSO6	27	0	3.902	1.026	0.037	-0.755

This research also determined the factor loadings of the study variables to assess the questionnaire's individual-level validity. When the values of each item are more significant than 0.60, the factor loadings are acceptable (Shevlin & Miles, 1998). Thus, the things that loaded at less

than 0.60 should be removed. Consequently, the results of this study indicate that each item used in the data collection has adequate factor loadings. Therefore, the findings of this study are supported by valid scale items. Table 2 displays the results.

Table 2*Factor Loadings*

Items	Personalized Sports for Children	Personalized Sports for Middle-aged	Personalized Sports for Old People	Personalized Sports for Youth	Visual Psychology
PSC1	0.707				
PSC2	0.682				
PSC3	0.861				
PSC4	0.850				
PSC5	0.831				
PSM1		0.862			
PSM2		0.877			
PSM3		0.855			
PSM4		0.914			
PSM5		0.866			
PSO1			0.806		
PSO2			0.859		
PSO3			0.725		
PSO4			0.606		
PSO5			0.727		
PSO6			0.663		
PSY1				0.865	
PSY2				0.867	
PSY3				0.817	
PSY4				0.861	
PSY5				0.677	
VP1					0.652
VP2					0.714
VP3					0.810
VP4					0.839
VP5					0.755
VP6					0.724

In addition, Cronbach alpha, composite reliability, and average variance were extracted to evaluate the findings' reliability and validity. Cronbach's alpha should be greater than 0.70 for significant validity of research results (Tavakol & Dennick, 2011), composite reliability should be

greater than 0.70 for significant findings (Alarcón, Sánchez, & De Olavide, 2015), and the average variance extracted should be greater than 0.50 (Alarcón et al., 2015). The data in Table 3 indicate that the validity and dependability of the findings are accepted appropriately.

Table 3

Reliability and Validity

Variables	Cronbach's Alpha	Composite Reliability	Average Variance Extracted
Personalized Sports for Children	0.849	0.892	0.624
Personalized Sports for Middle-aged	0.923	0.942	0.766
Personalized Sports for Old People	0.811	0.865	0.523
Personalized Sports for Youth	0.876	0.911	0.673
Visual Psychology	0.844	0.885	0.565

Additionally, the findings of discriminant validity are tested to corroborate the distinction between the scale items used to collect data. The Heterotrait-Monotrait (HTMT) method is used to examine the discriminant validity. According to Gold,

Malhotra, and Segars (2001), the discriminant fact of the HTMT should be less than 0.90 for significant results. The data presented in Table 4 demonstrated that the discriminant validity of this study is substantial.

Table 4

Discriminant Validity - HTMT

	Personalized Sports for Children	Personalized Sports for Middle-aged	Personalized Sports for Old People	Personalized Sports for Youth	Visual Psychology
Personalized Sports for Children					
Personalized Sports for Middle-aged	0.614				
Personalized Sports for Old People	0.686	0.612			
Personalized Sports for Youth	0.694	0.761	0.814		
Visual Psychology	0.832	0.666	0.774	0.841	

In addition, the findings of cross-loadings are evaluated for discriminant validity. Finally, the data for cross-loadings are compared for accuracy. Cross-loadings examine the relationship and differentiation between the data used for various scale items in the research

(Barlat et al., 2013). The values of significant cross-loadings for one variable's item should be greater than the results of cross-loadings of other variables. According to the study data presented in Table 5, considerable cross-loading is thus accomplished.

Table 5

Discriminant Validity – Cross Loadings

Items	Personalized Sports for Children	Personalized Sports for Middle-aged	Personalized Sports for Old People	Personalized Sports for Youth	Visual Psychology
PSC1	0.707	0.560	0.573	0.559	0.737
PSC2	0.682	0.243	0.273	0.482	0.440
PSC3	0.861	0.427	0.442	0.705	0.533
PSC4	0.850	0.443	0.479	0.714	0.556
PSC5	0.831	0.482	0.503	0.740	0.520
PSM1	0.421	0.862	0.677	0.572	0.445
PSM2	0.532	0.877	0.664	0.631	0.533
PSM3	0.481	0.855	0.721	0.582	0.496
PSM4	0.511	0.914	0.742	0.607	0.548
PSM5	0.532	0.866	0.763	0.593	0.567
PSO1	0.520	0.783	0.806	0.607	0.561
PSO2	0.511	0.806	0.859	0.629	0.549
PSO3	0.465	0.715	0.725	0.574	0.441
PSO4	0.244	0.266	0.506	0.275	0.324
PSO5	0.382	0.429	0.727	0.424	0.451
PSO6	0.415	0.404	0.663	0.440	0.429
PSY1	0.737	0.556	0.563	0.865	0.639
PSY2	0.734	0.540	0.537	0.867	0.609
PSY3	0.699	0.422	0.433	0.817	0.532
PSY4	0.675	0.549	0.639	0.861	0.628
PSY5	0.487	0.635	0.681	0.677	0.552
VP1	0.547	0.323	0.382	0.521	0.652
VP2	0.437	0.394	0.481	0.497	0.714
VP3	0.612	0.493	0.521	0.614	0.810
VP4	0.631	0.508	0.508	0.626	0.839
VP5	0.529	0.511	0.520	0.512	0.755
VP6	0.529	0.433	0.491	0.484	0.724

Using t-values, the findings of the research hypothesis are evaluated. To these findings, the structural equation model is employed. According to the findings of hypothesis 1, visual psychology and personalized sports for children have a significant relationship. Moreover, according to the results of hypothesis 2, there is an essential link between visual psychology and youth-

tailored personalized athletics. Moreover, according to the effects of hypothesis 3, there is a connection between visual psychology and middle-aged personalized athletics. Finally, according to the results of hypothesis 4, there is a connection between visual psychology and individualized athletics for older people. The results are depicted in [Figure 2](#) and [Table 6](#).

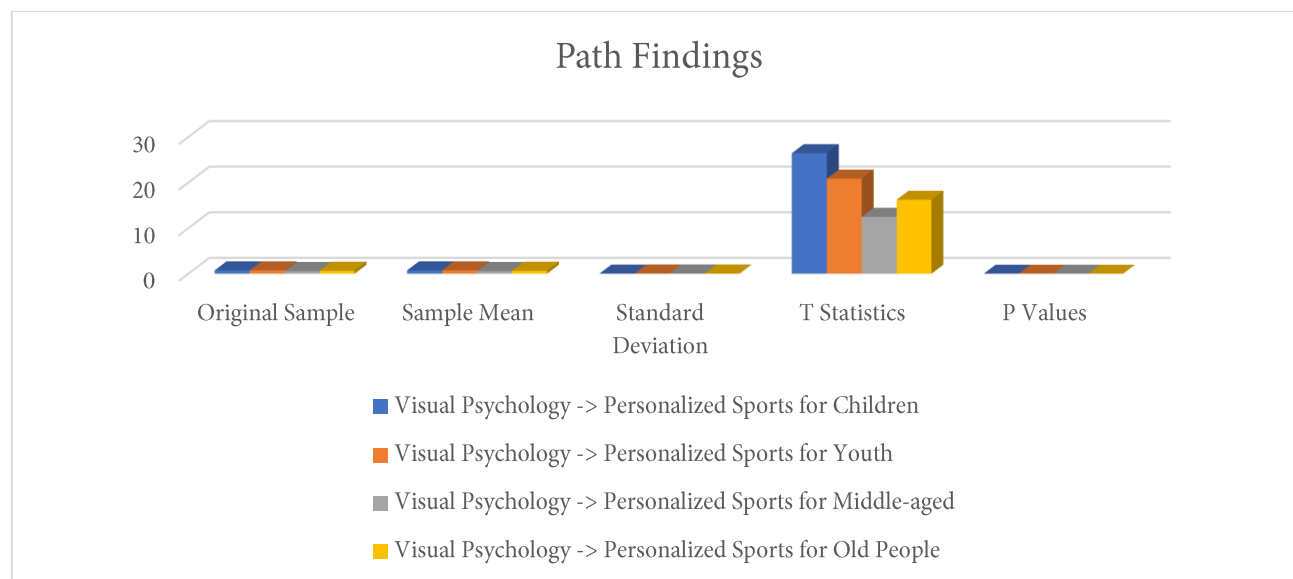


Figure 2. Path Findings

Table 6

Path Findings

Relationships	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
Visual Psychology -> Personalized Sports for Children	0.732	0.732	0.028	26.441	0.000
Visual Psychology -> Personalized Sports for Youth	0.725	0.726	0.035	20.851	0.000
Visual Psychology -> Personalized Sports for Middle-aged	0.596	0.597	0.048	12.469	0.000
Visual Psychology -> Personalized Sports for Old People	0.645	0.649	0.04	16.219	0.000

5. Discussion

According to the findings of hypothesis 1, visual psychology and personalized sports for children have a significant relationship. Moreover, according to the results of hypothesis 2, there is an important relationship between visual psychology and youth-specific personalized athletics. Moreover, according to the effects of hypothesis 3, there is a connection between visual psychology and middle-aged personalized athletics. Moreover, based on the results of hypothesis 4, there is a connection between visual psychology and personalized athletics for older people. However, these conclusions are consistent with those of previous research. According to [Kermavnar, Shannon, and O'Sullivan \(2021\)](#), a type of social sports and cultural activity with strong aesthetic and artistic elements that involves aesthetic standardized, organized, and rhythmic body exercises to reflect people's physical exercise

ability, promote people's overall development, and contain strong aesthetic and artistic elements.

Moreover, sports public service is a general term in China's sports industry. [Williams et al. \(2021\)](#) define sports public service as a public service that satisfies the requirements of citizens by offering a variety of sports products. [Yu et al. \(2020\)](#) redefined the concept of public sports service to realize and maintain the general interests of sports of the public or the social community and to ensure the realization of their sports rights and interests, the public sector with the government at its core, according to its legal responsibilities, uses public power, through a variety of ways and means, and uses various forms of public sports goods as the carrier. Moreover, [Uhm et al. \(2022\)](#) reported that the public service products of sports, art, and fitness first possess the characteristic of a product that is manufactured to promote people's health and can serve others.

In addition, the results of the data analysis of the physiological and psychological characteristics of infants and adolescents were remarkable. Children and adolescents between the ages of 7 and 17 are considered at the second apex of growth and development, a crucial stage in an individual's development. At this stage, an individual's physical and psychological development is not complete and mature, but they have entered a period of accelerated growth (Bee, King, & Stornelli, 2021). As a result, it has unique physiological and psychological characteristics compared to other ages. In addition, between the ages of 7 and 17, the development of coordination, sensitivity, and speed of sports ability entered a period of optimum growth, while other sports abilities gradually improved. Between 7 and 12, the coordination quality develops more rapidly than other qualities before eventually slowing down and even becoming stagnant. Therefore, when designing public service products of sports art and fitness for children and adolescents, we must pay attention to the exercise of their coordination quality, such as by incorporating more upper- and lower-limb coordination actions or rhythmic musical movements (Yun et al., 2021).

Pay close attention to controlling the strength of the entire set of products. Avoid using actions with a long duration, high strength, and stringent quality requirements for power to prevent unwarranted harm to the limbs (Rose et al., 2021). Due to deficient psychological development, primary school students have poor self-control at various developmental stages. However, as middle school students entered adolescence, rebellious psychology, gender consciousness, and emotional and moral issues emerged. Consequently, when designing public products for sports art fitness services, we must choose representative music that can arouse interest or resonance at various age stages and combine it with age-appropriate motion design to stimulate their interest in physical exercise. The physiological and psychological maturation of the human body occurs between the ages of 18 and 44, when the development of bones, joints, muscle strength, and various body systems achieve its pinnacle. This is the golden age of human development. At this stage, individuals have solid psychological adjustment abilities, social interaction skills, and behavioral control, and their psychological development is complete. Therefore, when designing sports art and fitness products for young practitioners, the intensity and difficulty of movement should be substantially more significant than that of young learners. The action's problem can be increased in the complete set of actions by altering its direction and cadence and breaking its symmetry. In addition, the intensity of the

exercise can be increased by extending the duration of the complete set of actions and by increasing the number of steps per unit of time to stimulate juvenile practitioners' challenge desire and practice zeal.

The period between 45 and 74 years is known as middle and senior age. At this stage, the body's physiological functions endure various degenerative changes, including muscle atrophy, tooth loss, bone deformation, and joint inflammation. In terms of psychological processes, the ability to sense and perceive is also progressively diminishing, and symptoms such as memory loss and a sluggish reaction time can easily manifest. When designing public service products for sports art and fitness for middle-aged and elderly practitioners, the physical and psychological characteristics of the service objects should be closely tied to the presence or absence of specific chronic diseases (Yağız, 2020). It isn't easy to be excessively enormous regarding movement design, intensity, and amplitude. People of middle age and older have years of experience, a unique perspective on life, and distinct musical preferences compared to younger generations.

In contemporary industrial production, the color application effect of products is frequently not determined by the number or number of colors but rather by whether the selected color is reasonable and the combination is suitable (Asadollahi et al., 2020). Even if only two or three colors are used, excellent visual effects can be created if individuals select colors to form appropriate combinations. Regarding consumers' visual perception, essential products can sometimes make a stronger impression. Designers can substantially improve consumers' short-term memory by applying colors and color combinations with skill. In addition, Coca-Cola's outer packaging is only red and white, but it is very eye-catching. However, combining these two colors allows consumers to recall the product's characteristics and trademarks with greater clarity, thereby increasing sales. Color is one of the essential links (Jeon et al., 2020) between the specific content, characteristics, and external image of commodities and their design. The display of a color on the content and attributes of things is the so-called image color, which is the concept formed by consumers as they progressively advance to the level of rational cognition under the influence of accumulated perceptual cognition over time. Then, specific images reflect it; this is visual psychology. After seeing numerous image colors on the market, consumers will reflect on and associate various information. After receiving the optical signal, the brain will form an external image of the object. Therefore, image color is more contagious to consumers than the product's other external factors.

Moreover, as the economy and society evolve, so does the public's preference for particular commodities. In past industrial design, more emphasis was placed on shaping commodity shapes, with the elegance of color emphasizing a sense of hierarchy. The current trend in terms of color application has changed. The colors have been reduced, made more apparent, and made more contemporary to emphasize the manner of the merchandise. Moreover, PepsiCo's logo only pertains to three colors: red, blue, and white, with the former two serving as the focal point to emphasize the product's theme and create a visual impact on consumers (Valipour & Sayary, 2019). Various colors influence consumers. In this environment, designers must pay close attention to color selection and coordination (Dubinsky, 2019). According to the design content and theme requirements, the use of color matching and style that can emphasize personality and novelty can leave a lasting impression on consumers. In addition, the Japanese "oolong tea" has altered its previous color form and incorporated black elements, resulting in a buoyant market response. Historically, most tea packaging was brown or green, which caused consumers to experience a degree of visual fatigue. The utilization of black has the upper hand. After its introduction, it soon became the focal point of consumers' attention and enhanced its appeal, stimulating the demand for purchase.

6. Theoretical and Practical Implications

According to the findings, this research has expanded the corpus of knowledge with significant implications that were not previously thoroughly discussed. Initially, this study revealed a substantial connection between visual psychology and personalized sports for children. In addition, this study demonstrated a significant relationship between visual psychology and personalized youth athletics. In addition, this study found a correlation between visual psychology and personalized sports for middle-aged individuals. Finally, this study concluded a connection between visual psychology and personalized sports for senior citizens. In addition to these theoretical implications, however, this research has several future directions.

When selecting personalized sports art fitness public service products, the priorities of various age groups will differ. Therefore, when designing such products, designers should fully consider the physiological and visual psychological characteristics of various ages, as well as control and fully consider the choice of music style, the overall structure of the movement, the control

of the number of movement beats, the difficulty of the entire set of movements, and the overall intensity of movement. In addition, the naivety and romanticism of children and adolescents, the vitality, sunshine, and fashion of youth, and the aesthetic and charming artistic characteristics of the middle-aged and elderly should be incorporated into the products to increase the artistry and grateful appreciation of fitness products and improve their overall quality. Therefore, in the design of personalized sports industrial products, designers must fully consider the physiological and visual psychological characteristics of different age stages, as well as the selection of music style, the overall structure of the movement, the control of the number of movements beats, the difficulty of the entire set of movements, and the intensity of the whole-body activity. In addition, this investigation revealed that young athletes have a long way to go. They must not only participate in sports, "do not talk hard, focus on implementation," but also persist, "perseverance is also advantageous."

7. Future Directions

According to the empirical evidence, the findings of this study are indeed novel. Additionally, this research has both theoretical and practical implications. On the other hand, scholars should follow the prospective directions of this research in future studies to expand the body of knowledge regarding students' psychological well-being. Future research must focus on potential mediating and moderating variables. Thus, future research is motivated to determine the mediating effect of psychological health on the application of visual psychology in personalized sports industrial design. In addition, future research should investigate the mediating effect of mental health on the application of visual psychology to personalized sports industrial design. Alternatively, future research should explore the moderating effect of color branding on the application of visual psychology in personalized sports industrial design. By pursuing these avenues, future research can contribute significantly to the body of knowledge and literature. Thus, it is hoped that scholars will labor in these areas to contribute significantly to the body of knowledge.

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