Effect of wall colour on the perception of hairdressing salons

Kemal Yildirim, Aysen Capanoglu[*], Kubulay Cagatay and M Lutfi Hidayetoglu[†]

Department of Furniture and Decoration, Gazi University, Turkey
[*]Department of Interior Architecture and Environmental Design, Hacettepe University, Turkey
[†]Department of Interior Architecture and Environmental Design, Selçuk University, Turkey
Email: kemaly@gazi.edu.tr

The objective of this research was to assess the effects of three different colours on the interior wall surfaces of hairdressing salons on the perception of women taking into account their age and frequency of use. With this objective, a semantic differential scale composed of ten bipolar adjectives was applied for evaluating photographs of hairdressing salons with cream, lilac and orange wall surfaces by the customers of the *EMA Hairdressing Salon*, Ankara, Turkey. According to the results, spaces with lilac walls were perceived more positively compared to cream or orange coloured spaces. In addition it was determined that young customers perceived the spaces more positively compared to middle-aged customers. Furthermore, it was determined that the positive / negative perception of the space on the frequency of use of the hairdressing salon by the customers did not have a statistically significant effect.

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Introduction

People are continuously confronted with many kinds of stimuli that come from the environment in which they are located. Baker [1] has organised environmental factors into three groups: ambient factors (temperature, noise, scent, music and lighting, etc.), design factors (architecture, colour, materials, interior order, texture and the layout plan of the space, etc.) and social factors (age, gender, customers, personnel, etc.). As can be understood from Baker's classification, environmental data are very complicated and diversified.

In a study concerning commercial space, Burns and Caughey [2] have stated that the most common perceptual categories are "holistic impressions" (architectural style, function, atmosphere, and space planning) accounting for 35.85% of the units of analysis, followed by "room components" (ceiling, windows, lighting, floor, walls, and other structural elements) accounting for 22.26%, "colour and pattern", accounting for 19.44%, and "furniture and accessories" (furniture, mirrors, art, plants, and table settings) accounting for 18.31% of the units of analysis. Other categories like "type and cost of food", "geographic context", and "customer" accounted for less than 2% each. Consequently, it can be stated that elements such as the colour of the space, its form, style and dimensions, which constitute visual information, have a significant effect on the perception of spaces.

The effects of the physical environment may be of particular importance in hairdressing salons, where people require a relatively high degree of physical attractiveness, beauty and satisfaction. Hairdressing salons are designed and organised as a space for the consumption of the body and of female beauty. Visits to hairdressing salons usually provide pleasure to the customer: it is a time for relaxation in a pleasant atmosphere where dedicated care, sometimes servant-like, is given. Such visits also facilitate social relationships and have as a final benefit the improvement in appearance and physical attractiveness of the customer. The growing number of hairdressing salons and the diversity and high technology of hair care products clearly illustrate the importance of this service to consumers [3]. Current environmental research about hairdressing salons is largely based on ventilation, temperature, humidity and illumination levels in the interior or work conditions, health and chemical exposures or effects of hair treatment on mood [3-7]. Although wall colour is an environmental stimulus that can easily alter the atmosphere of an environment, the literature on the use of wall colour in hairdressing salons is still incomplete.

In the current study, the effects of the perception on women concerning the colour of a space were researched. As mentioned, there exists few studies in the literature that examine the effects on consumers of colour as an interior design characteristic in terms of environmental factors in hairdressing salons. However, much fundamental research has been conducted on the effects of colour on emotions, which examine the effects on people of various colours used in interior spaces [8-14]. In such studies, the colours used inside a space affect the perceptions and behaviors of the users. Similarly, in the current research, it is also envisaged that the perceived quality of the architectural spaces designed with different colours will also be different in a hairdressing salon and that there will be a statistical difference in terms of the perceived quality evaluations of it. Beginning with these assumptions, the hypotheses of the current research are that the characteristic features of hairdressing salons designed with different colours would positively or negatively affect the perception of the costumers and that this effect would also display differences according to the ages of the women.

The colours of any work setting are an important environmental factor that affects not only customers' state of mind and satisfaction, but also the motivation and performance of personnel. Colour is not additional to the environmental situation – rather, it is posited to have an important and active role in relationship between a person and the surrounding environment [15]. Colour influences our perception of temperature [16]. It can create uncomfortable situations, such as glare or distracting after images [17]. Colours are influential on the psychology of people with the low or high vibrating energies that they contain. They have the strength to deeply influence the emotional, mental and physical world of people. Colour is also effective in the provision of psycho-social needs. Just as some colours are depressing and boring, some colours create a feeling of pleasure and carefreeness. Just as some colours are stimulative, attractive and constructive, they can also be destructive, repulsive or depressive [18]. The tone of a colour is related to the wavelength of that colour, with short

wavelengths (e.g., blue and lilac) being described as "cool," and long wavelengths (e.g., red and orange) being described as "warm" [19].

Colours tend to evoke various emotional feelings, with warm colours making people focus on the outside and increase their awareness of the surroundings, resulting in emotions like motivation, aggressiveness, anger, tension, excitement, happiness and dynamism; and cool colours making people introverted and providing for them to focus on visual and mental tasks, resulting in emotions like relaxation, peacefulness, spaciousness, comfort, security, peace and tranquility [8,11-13,20].

Ou *et al.* [21] have stated that colours may even play an important role for customers in making decisions on what they like and dislike. Similarly, in a study related to department stores and shopping decisions, Babin, Hardesty and Suter [22] have stated that cool colour interior spaces were perceived more positively compared to warm colour interior spaces. This study emphasised that interior spaces decorated with colours such as lilac or blue were perceived more positively compared to interior spaces decorated with red, orange, and similar warm colours. Yildirim *et al.* [14] have examined the effects on customers of the interior colours of cafés and pastry shops, determining that light purple (lilac) interior spaces were perceived more positively compared to autumn yellow spaces. In the light of all these studies the first hypothesis was generated as follows:

H1: The colours used in interior spaces influence the perception of space and interpretations of users.

In addition, the literature on colour perception shows a continuously changing relationship between colour preference and age. It is apparently a development that starts from childhood. But, as age advances, the attitude of persons toward colours assumes a more complicated condition. Frieling [23] has made an experimental study related to colour preferences, showing 23 colours to children and young people between 5-19 years of age, concluding that colours such as black and gray that are rejected in childhood were used in advanced ages, whereas colours such as rose, lilac and purple, which are used childhood, are rejected after adolescence. In some studies, it has been claimed that such preference changes could be a result of many factors, including societal processes, community influences, aesthetic preferences and visual and audio experiences [24,25]. Other studies have stated that the perception of space of young customers were more positive compared to those of more elderly customers [14,26,27]. In the light of all these studies the second hypothesis was generated as follows:

H2: The perception of space of young customers will more positive compared to those of more elderly customers.

The interpretation(s) by users of a space are not only connected to objective criteria. Another important factor in the perception and evaluation of spaces is familiarity with that space. In addition to any external stimuli occurring during in this process of perception, there are internal factors such as a user's preliminary knowledge of a space, the amount of time previously spent in that space and other such experiences, which are subjective factors that affect the interpretation and perception of a space. When a customer enters into a space for the first time, he/she is more careful in response to environmental stimuli. As the frequency of use of the space increases, the data related to the space become better known and the reactions shown to these data decrease. From this point of view the third hypothesis was generated as follows:

H3: The customers who have experienced a space previously will perceive the environmental data of that space differently compared to customers who have come for the first time.

Other environmental data, such as geometrical shape (square, rectangle, circle, etc.), physical dimensions, architectural characteristics and decoration, could also affect the perception of a space. Many studies [28-37] conclude that the form, materials, accessories and decoration of a space are highly effective on the perception of it and create differences in its evaluation. In such situations with multiple variables, it is necessary to make constant all of the environmental factors excluding the variable ones to be tested. As a result, in this study all of the characteristics of the space, such as the geometric shape, design, plan, etc., excluding colour, were kept constant, in an attempt to discover the effects of different colours on the perception of hairdressing salons.

Method

Selection of subjects

This study was made at the *EMA Hairdressing Salon*, located in Ankara, Turkey. The subjects taken into the scope of the research were selected at random from among the many customers frequenting the establishment. The survey was attempted to be applied in equal numbers by taking into account the age and educational status of the subjects. Accordingly, a "perception survey" was applied to a total of 70 customers. All of the customers who participated in the survey were women, 50% were between the ages of 18-29 and 50% were 30-60 years of age. In terms of education, 53% were high school graduates and 47% were university graduates. The survey was applied at different times of the day during the week and also on the weekend. The subjects completed the survey in approximately 15 minutes. The data of the survey were obtained during a 2-month period at the end of 2007 at the hairdressing salon through face-to-face interviews.

Design of survey

The survey form was organised into two parts. The first part was composed of questions aimed at determining general information related to the age, educational status and frequency of use of the hairdressing salon by the subjects. The second part of the survey was composed of questions aimed at evaluating the perceived quality of the spaces. This second part, the evaluation of the hairdressing salon benefited from the criteria found to be valid and reliable in the studies previously made by Yildirim *et al.* [14,36], Imamoglu [30,38], Erturk [39], Fiedler [40], Green [41], Berlyne [42], and Kaya and Weber [43]. A semantic differential scale composed of 10 bipolar adjectives (roomy/cramped, simple/complex, tidy/untidy, pleasant/unpleasant, interesting/boring, large/small, calm/restless, peaceful/unpeaceful, warm/cool and light/dark) in five steps (1 = positive, 5 = negative) were used.

Research setting and procedure

The existing walls of the *EMA Hairdressing Salon* are cream-coloured at present. In order to determine the test colours for the study, the wall colours used at 32 hairdressing salons in Ankara were examined. It was determined that warm colours (orange, pinkish-orange, autumn yellow and pink) were used at 59% of the salons, cool colours (lilac and green) at 13% and neutral colours (ice white and cream) at 28% of the salons. Consequently, the present colour of the salon was accepted as a neutral colour (cream) in the study and orange was used as a warm test colour and lilac was used as

a cool test colour. Then, photographs of the *EMA Hairdressing Salon* were taken from different angles and the walls digitally manipulated to be warm (orange) and cool (lilac) using the *Photoshop* computer software program, giving the Lab and RGB values (Table 1).

Colours	Application area	CIELAB values			RGB values		
		L*	a*	b*	R	G	B
Cream	wall	98	0	5	252	250	238
Lilac	wall	75	20	-12	213	172	207
Orange	wall	75	20	40	235	170	111

Table 1: CIELAB and RGB values of the colours used in the study.

Only one intervention was made in these digital arrangements in terms of the wall colours. In general, the colour relationship between all the elements that will impact on how the environment is perceived. With this in mind, the other variables, such as furnishings, furniture and amounts of light were preserved in their existing form (e.g. chairs were used as their existing colour with black). For the salon lighting, natural light and artificial lighting from the lighting fixtures are in use. During the day, enough sunlight enters through the existing window. In addition, the hair styling section uses 25W spot lighting fixtures. For night lighting, fluorescent lamps are provided that colour rendering index is high (Ra=85). Thus, fluorescent lights' colour alteration were minimised. The picture used in the questionnaire was taken on August at 2pm, with the illuminance level in the middle of the salon measured at 1250 lux.

The printouts of the digital images prepared in the different test colours (cream, lilac and orange) were made on A4 size photographic paper. The subjects were asked to fill the research survey by looking at these photographs. The architectural plan of the hairdressing salon used in the study and its details are given in Figure 1 and Table 2 respectively. Photographs of the hairdressing salon are given in Figure 2.

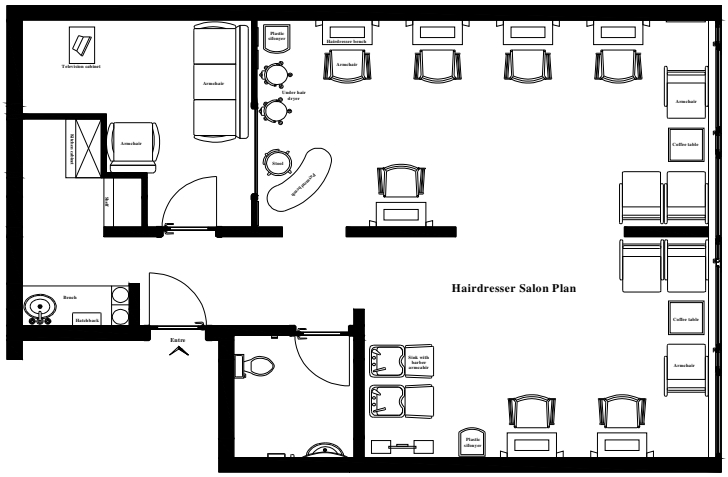

Figure 1: Architectural plan and furnishing elements of the EMA hairdressing salon where the study was conducted.

Furnishing Elements	Width	Depth	Height	Quantity
Customer Armchairs	55	50	4	7
Haircutting Table	58	32	82	7
Waiting Armchairs	50	66	40	6
Hair shampooing Armchair	43	75	50	2
Coffee Table	40	40	38	2
Payment Desk	100	55	76	1
Chair	48	45	46	1
Hair Shaping	32	32	120	2
Drawer Unit	40	40	90	2
Stand	80	25	120	1

Table 2: Dimensions and quantity of the furnishing elements of the EMA hairdressing salon.

Figure 2: Photographs of the EMA hairdressing salon with different wall colours: cream (left), lilac (middle) and orange (right).

Following the application of the questionnaires, it was necessary to summarise and present the data obtained in the research according to certain rules, in order to understand and compare it with other results. In this way, the evaluations of the environmental conditions of the hairdressing salon by the customers were accepted as "*dependent variables*" whereas the colours of the hairdressing salon, age of the customers and their frequency of usage were accepted as "*independent variables*". The dependent variables are:

- Roomy/Cramped
- Simple/Complex
- Tidy/Untidy
- Pleasant/Unpleasant
- Interesting/Boring
- Large/Small
- Calm/Restless
- Peaceful/Unpeaceful
- Warm/Cool
- Light/Dark

The model for testing the research hypotheses was composed in the form of a 3 (colours of the hairdressing salon) × 2 (age group) chart. After conducting reliability tests of the data obtained with the Cronbach Alpha method, the categorical means, standard deviation values and the homogeneity groups were determined. A One-way Analysis of Variance (ANOVA) technique was used in the evaluation of the quality of the space for examining the colours of the hairdressing salon and the age differences, for testing whether or not the relationships at the $p<0.05$ levels were statistically significant. Subsequently, a Multiple Analysis of Variance (MANOVA) technique was applied for the dual comparisons. The data for comparing the means of the variables found to be significant in the variance analyses were then prepared as a graph.

Results and discussion

The reliability of the dependent variables covering the conceptual evaluations made by the customers aimed at the *EMA Hairdressing Salon* prepared in three different research colours (cream, lilac and orange) were tested with the "Cronbach Alpha" method. Accordingly, the reliability coefficient for the semantic differential scale of ten bipolar adjectives was 0.76. Previously, in studies made by Bagozzi and Yi [44], McKinley *et al.* [45], Bosma *et al.* [46], Grewal *et al.* [47], and Kim and Jin [48] stated that the alpha reliability coefficients for all elements can be accepted as "reliable" when it is above 0.70. Accordingly, the Cronbach Alpha coefficient obtained in the current study is above this specified value. As a result, the semantic differential scale was found to be "reliable."

The data for the evaluation of the quality of the space connected to the colours used on the wall surfaces of the hairdressing salon, the categorical means, the standard deviation and homogeneity values are given in Table 3.

Dependent variables	Colours of the hairdressing salon									Age group			
	Cream			Lilac			Orange			18-29		30-60	
	$\overline{X}$	SD	HG	$\overline{X}$	SD	HG	$\overline{X}$	SD	HG	$\overline{X}$	SD	$\overline{X}$	SD
Roomy/Cramped	3.51	1.47	A	1.78	1.24	A	2.17	1.37	B	2.35	1.61	2.62	1.48
Simple/Complex	1.90	1.21	A	2.92	1.59	B	2.35	1.37	A	2.24	1.47	2.54	1.42
Tidy/Untidy	1.77	0.93	A	1.93	1.04	A	2.32	1.22	B	1.89	1.15	2.12	1.02
Pleasant/Unpleasant	2.59	1.25	A	2.30	1.25	A	2.51	1.25	A	2.44	1.33	2.48	1.17
Interesting/Boring	4.93	0.93	C	1.78	1.11	A	2.71	1.50	B	3.02	1.57	2.88	1.65
Large/Small	2.47	1.18	A	2.52	1.21	A	2.92	1.13	A	2.56	1.23	2.72	1.13
Calm/Restless	2.80	1.26	A	2.40	1.33	A	2.52	1.11	A	2.43	1.39	2.71	1.07
Peaceful/Unpeaceful	3.58	3.75	B	2.27	1.27	A	2.75	1.14	A	2.68	1.33	3.05	3.17
Warm/Cool	3.35	1.88	B	2.21	1.49	A	2.51	1.05	A	2.49	1.29	2.89	1.36
Light/Dark	2.59	1.24	A	2.41	1.35	A	2.12	1.08	A	2.18	1.07	2.57	1.37

Table 3: Mean ($\overline{X}$), standard deviation (SD) and homogeneity (HG) values of the dependent variables.

The obtained data was then visualised in graphic form in Figures 3 and 4 in order to compare the differences among the perceived quality evaluations of the hairdressing salons for the variance sources found to be significant in the analysis of variance and the mean values of the differences between the age levels.

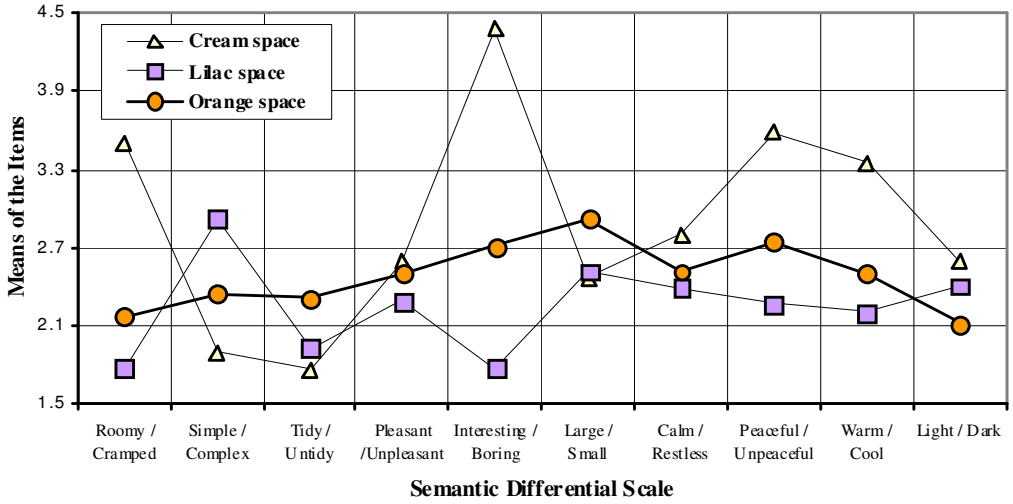

Figure 3: Perceptual evaluations of the EMA hairdressing salon by its users. Note, means of variables listed between 1-5 with large numbers corresponding to negative responses.

In Figure 3, it is observed that for each of the bipolar adjectives, the lilac-coloured hairdressing salon received the lowest values (positive), whereas the cream-coloured hairdressing salon received the highest values (negative). Accordingly, it was found that the differences among the dependent variables, which cover the perceived quality of the hairdressing salon, were statistically significant ($p<0.05$) for the following bipolar adjectives: roomy/cramped ($F=30.810$; $df=2$; $p=0.000$), simple/complex ($F=9.455$; $df=2$; $p=0.000$), tidy/untidy ($F=5.015$; $df=2$; $p=0.03$), pleasant/unpleasant ($F= 82.207$; $df= 2$; $p=0.000$), calm/restless ($F=1.892$; $df=2$; $p=0.05$), large/small ($F=3.127$; $df=2$; $p=0.02$) and warm/cool ($F=15.541$; $df=2$; $p=0.000$). In the end, it can be said that the differences amongst the colours of the hairdressing salon interior space had a statistically significant effect on the perception of the customers, which is a result that supports the main hypothesis of this study. According to these results, it can be clearly seen that the lilac-coloured example was perceived more positively compared to the other examples.

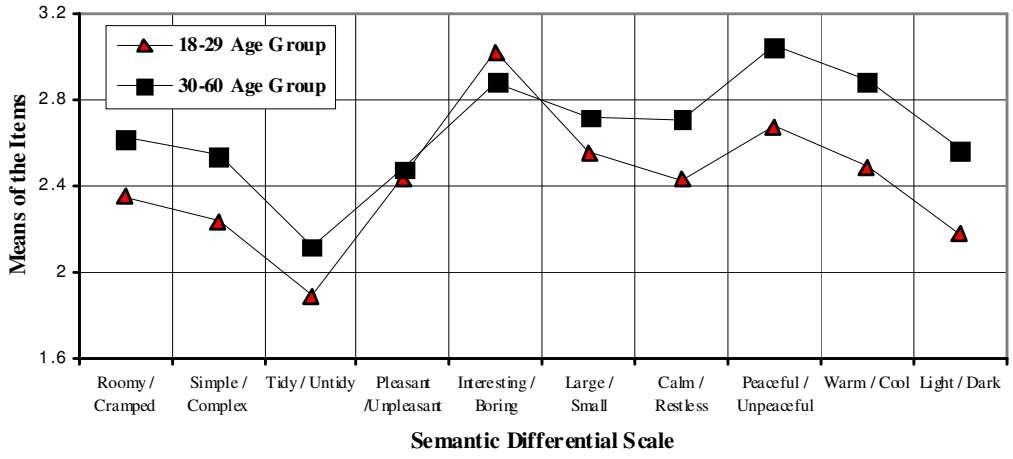

Figure 4: Effect of age on the dependent variables. Note, means of variables listed between 1-5 with large numbers corresponding to negative responses.

In Figure 4, it is observed that younger customers produced larger (positive) values for each dependent variable in terms of the quality perceptions of the different coloured hairdressing salons, whereas, in contrast to this, middle-aged customers produced smaller (negative) values. Accordingly, the differences in age groups in the evaluation of the hairdressing salon were found to be statistically significant (that is, $p<0.05$) in the dependent variable form for the following bipolar adjectives: warm/cool ($F=4.747$; $df=1$; $p=0.030$) and light/dark ($F=5.281$; $df=1$; $p=0.023$). Accordingly, there were differences amongst the quality perceptions of the hairdressing space by the customers in different age groups, which support the second hypothesis of this study.

As a result, it is understood that the different colours and the age differences of the users are influential on the evaluation of the perceived quality of the hairdressing salon space. When the average values are examined, it is observed that the lilac-coloured space has been evaluated more positively compared to the orange and cream-coloured spaces. Furthermore, it can be stated that younger customers had a more positive approach in the evaluation of the quality of space compared to middle-aged customers.

The differences among the independent variables (hairdressing salon colour and customer age), were tested using the multiple analysis of variance method. The results of the analysis of variance on the effect of these independent variables on the dependent variables in terms of the perception of the hairdressing salon are given in Table 4.

Independent variables	Value	*F*	*df*	Significance (level)
Colour of the space	0.675	9.976	20	0.000 ($p<0.001$)
Age	0.068	1.433	10	0.168 (*ns*)
Colour of the space × Age	0.207	2.261	20	0.002 ($p<0.01$)

Table 4: MANOVA test results for the independent variables. (ns: not significant)

According to these results, "colour of the space" ($p<0.001$) and the dual interaction of colour of the space and age ($p<0.01$) were found to be statistically significant. In other words, the difference in the colour of the space at any age level affected the perceptions of the hairdressing salon space by the customers to a significant extent.

Lastly, the effects of the frequency of using the hairdressing salon on the perception of the customers were tested with ANOVA. A statistically significant difference at the level of $p<0.05$ was not found for the following bipolar adjectives: roomy/cramped ($F=0.641$; $df=2$; $p=0.528$), simple/complex ($F=2.629$; $df=2$; $p=0.075$), tidy/untidy ($F=0.288$; $df=2$; $p=0.750$), pleasant/unpleasant ($F=0.449$; $df=2$; $p=0.639$), interesting/boring ($F=0.147$; $df=2$; $p=0.863$), large/small ($F=0.161$; $df=2$; $p=0.851$), calm/restless ($F=0.612$; $df=2$; $p=0.543$), peaceful/unpeaceful ($F=0.128$; $df=2$; $p=0.880$), warm/cool ($F=0.015$; $df=2$; $p=0.985$) and light/dark ($F=1.538$; $df=2$; $p=0.218$). It is a result that does not support the third hypothesis of this study.

Conclusions

Three different colour types were used in this study: neutral, warm and cool. Cream, the existing colour of the research space, was used as the neutral colour, orange as the warm colour and lilac as the cool colour. The results of the study clearly indicate that the use of different colours in internal spaces of a hairdressing salon has a statistically significant effect on the perception of the customers. The

results showed that the lilac-coloured space was perceived more positively compared to the cream and orange-coloured spaces. In addition, the results of this work supports the findings of many studies which have stated that cool colours, such as blue or green, used in interior spaces, were perceived as pleasant, comfortable, calm and peaceful, whereas warm colours, such as red or orange, were perceived as more stimulating and made the space seem smaller than it actually was [8,11,13].

Another result indicates that the differences between age groups of the customers are significant in the evaluation of the quality of the interior space of a hairdressing salon. When the age variable was examined in two groups (18-29 and 30-60), younger customers interpreted the hairdressing salons more positively compared with older customers.

It can be stated that there is a changing relationship from positive thinking towards negative thinking when getting older. This situation can be explained by the changing experiences connected to the period of life of customers, the accumulation of knowledge previously acquired, the socio-cultural accumulations formed with time connected to a difference in generations, resistance shown to novelties and the fact that older people have a more critical viewpoint compared to younger people, supporting the findings of other studies on the topic of age and space perception [14,26,27].

Lastly, the effect of the frequency of use of the hairdressing salon in the evaluation of the quality of space was not statistically significant at the level of $p<0.05$. In a study by Dogu and Erkip [49] that discussed the effects of frequency of use in a similar manner to these results together with the concepts of direction finding and orientation, a relationship could not be set forth between the number of visits to the space and the direction finding performance. This result can be explained by the fact that the space discussed is a space that is used for a short period of time. Furthermore, it can be stated that this type of commercial space (hairdressing salon) is not one that relates with customer sentimental interaction, such as a home, and does not affect the every-day life of the user.

In summary, this study has shown that the colour of an interior space in hairdressing salons affects the perceptions of its customers. Similarly, Ingene [50] has stated that a pleasant shopping atmosphere positively affects the shopping time of customers and their desire to spend money. Bitner [51] has claimed that environmental factors of a space could be very influential in the communication between the image of the company and the intentions of the customers. Turley and Fugate [52] have stated that the atmosphere of the space, including visual effects such as appearances and arrangements, have a positive effect on the service evaluations of customers. Baker, Grewal, and Levy [53] have shown that a commercial space having a luxurious atmosphere (for example, pleasantness, attractiveness and cleanliness) could be evaluated in a more positive manner than a low class commercial space that applies discounts. As can also be observed in these studies, the conscious use of interior space environmental factors positively affects the perception of customers. The owners of commercial enterprises, hairdressing salons or otherwise, can benefit from these data to increase the comfort conditions of their customers, to extend the period of time of customer visits and to provide for more consumption (spending) by the customers.

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