

The Impact Of Interior Spaces' Color on Autistic and Psychiatric Patients' Well-Being

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Abstract

This study found that the interior spaces of autistic children and psychiatric patients should be given more attention by designers and research studies. Appropriate colors can have a significant impact on their interaction with their surrounding area. Color would have several more than one impact on different children suffering from autism. Understanding their psychological impressions towards color is needed so that designers will be able to apply colors appropriately. Besides, there is no specific color that may establish desirability or preference by autistic children and psychiatric patients. In addition, it was concluded that applying various colors in the interior spaces would have a negative impact. The study recommends the importance of providing a special color palette for this group of children and patients inside rehabilitation centers for children with autism and in psychiatric hospitals, but not to make it fixed inside the halls and make it flexible to suit their needs. However, Junior designers were found of good knowledge regarding autistic children's interior design needs in terms of color. It would be important to extend this study to deepen designers' knowledge about autistic attitudes and behaviors toward their interior spaces.

Keywords: Autism; Mental; Physical, Well-being, Colour, Light.

1. Introduction

Interior design is defined as the process of planning and studying interior spaces and finding appropriate solutions for these spaces. This is in terms of movement, distribution of furniture, selection of materials, colors, lighting, etc., innovatively. One of the aims is to equip a suitable environment that gives comfort and pleasure to its occupants. It is a science that cares for every human health, social or physical condition. Interior design plays a vital role in controlling the interior environment of any facility and it is certainly reflected either negatively or positively on its residents, as it affects their behavior, productivity, and mood, and therefore the interior environment of any facility also reflects the personality and condition of its residents. The importance of interior design for people suffering from autism appears; the appropriate interior design can control their behavior, productivity, learning, and acquisition of experiences and skills. As well, it ensures the provision of security and safety aspects in the space in which the child lives (ATTIA, 2020). Interior design is based on a range of elements design elements such as line, value, texture, and color.

Colors consider diversity within the space to distinguish its various elements and create the aimed mood and reflect the design concept planned for by the designer. The Greek term "autos," which means someone who lacks social awareness, is where the name "autism" originates. In general, autism is characterized by a lack of social communication, social interaction, and social imagination (Shareef & Farivarsadri, 2019). It is usually diagnosed in early childhood and needs special attention and treatment. Psychological research centers and autism organizations work to reduce the impact of this problem on society through media publications, awareness plans, and new treatment methods. Thus, little effort has been made in researching the needs of autistic patients when it comes to designing a space so far. However, the problems and issues related to architecture and interior design have not received sufficient attention. To be effective contributors to raising awareness of autism in the country, the importance, and key aspects of the interior design of rooms for people with autism were found important to be discussed.

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Basic specifications in autistic room design are useful not only for those with autism, as they give the mind relaxation for the attention to detail that anyone needs because normal people would consider incorporating some of these specifications with their home design. The planning and design of buildings and rooms for people with autism presents a great challenge and requires specialized expertise in this field. This study aims to explore the needs of people with autism in terms of testing their perception of color. This is because they have a different visual sense that has impacts on the brain. Interior designers must realize and understand the psychology of autistic children when designing their environment and take them into account in terms of choosing colors that have an impact on them (Shareef & Farivarsadri, 2019).

A literature review was conducted to discover problems related to children with autism's perception of color and light. A survey study conducted was by Shareef & Farivarsadri in North Cyprus. As part of the survey, participants were shown a set of colors (red, yellow, blue, green, white, and grey) and they were asked to isolate the positive and negative colors for children with autism. The result of this survey showed that more than 70% of teachers believed that grey, green, blue, and white had a positive effect on autistic children in the classroom, while red and yellow harmed them. In addition, they preferred cold and secondary colors over primary colors. The study also showed because of interviews and responses in questionnaires to teachers regarding light that nearly half of the teachers agreed that both natural and artificial lighting affects children with autism. Sunlight was found of positive effect; however, artificial lighting would increase autism spectrum disorders (Shareef & Farivarsadri, 2019).

Ghazali *et al.* found that avoiding excessive colors and direct lighting of sun and artificial lighting is important in interior environments as they hurt autistic children causing anxiety and distress. It was suggested to choose neutral and calm colors and avoid direct lighting of the sun and artificial lighting noises that cause flickering and have a negative effect, namely anxiety, and distress. The lighting proposal was to allocate windows in both the low and high levels in the classroom to use high-quality lighting and not to use direct sunlight (Ghazali *et al.*, 2018). El Shamy discussed the design of the interior environment of a psychiatric hospital considering various interior design elements. Among the elements were lighting and colors, which have a significant role and impact on the patient's psychological treatment. It showed that the intensity, color, and distribution of lighting have a significant impact on the psyche of the patient, so if the appropriate lighting is not distributed and chosen, it may increase depression. Both natural lighting and artificial lighting have different roles in stimulating the psyche of the patient. As for colors, they have several effects on the patient in terms of emotional, psychological, and physical, and each color has different negative and positive effects for everyone (El Shamy, 2021).

Previous studies showed that for autistic children some colors and lighting might affect them negatively causing adverse impacts. It is believed by the current researchers that these studies have limitations in developing a solution or proposal that might benefit this group in tackling these impacts. This research may be complementary to previous research conducted on the effect of the interior environment on autistic children so that a special color palette will be developed that would have a positive effect on autistic children, as well as special instructions for lighting when designing the interior environment for autistic children.

The interior environment in terms of colors and lighting for disabled children including autistic and psychopaths have been studied by several researchers and found to affect their psyche and the way they interact playing a major role in treating and improving their behavior of them. This study is concerned with reviewing these impacts and the association between color, light, and patients' mental health in interior environments.

This research aims to study the effect of color used in interior environments on autistic children. This is to establish an efficient guide that would be adopted by specialists in the interior design field to assist them in the design process. Moreover, it aims to shed the light on the alternative color and lighting designs that would help improve their psyche. This research would make interior designers pay more attention and consider this category whenever they will design an interior area used by them. Another aim is to compare junior designers' backgrounds and knowledge of autistic needs and preferences.

The objectives of this research are: to develop a guide for interior designers to use in designing and choosing colors and lighting in homes or centers that have children with autism, to understand the psychology of autistic children, and help them improve their psychological situation and raise the efficiency of their interaction within the surrounding environment, study the impact of different colors in terms of its role to modify the autistics behavior, evaluate the psychological and behavioral effects of using different colors and lighting in the interior spaces of children with autism.

2. Research method

2.1. Questionnaire

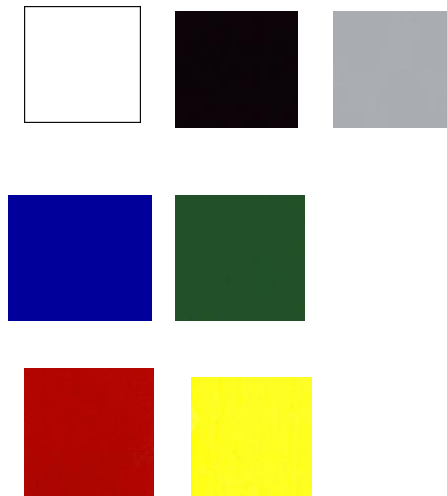
This research is to study the effect of colors used in interior environments on children with autism and the well-being of patients in hospitals and psychiatric clinics. This is to create an effective guide that will be adopted by interior design professionals to assist them in the design process. Moreover, it aims to highlight the colors that help in improving the psychology of autistic children and the well-being of psychiatric patients.

The methodology of this study adopted two processes; the necessary data were collected from previous research studies by reviewing journal papers concerned with the effect of colors on the psychological well-being of hospital patients and their impact on patients. The data and information were focused on junior designers who are interior design students at advanced levels in Oman College of Management and Technology, their ages ranging between 22-27 years, The survey was focused on their opinions and beliefs about the impression colors on children with autism. This is to find out their viewpoint and background regarding color's positive and negative impressions on autistic children. This question studies the impact of 7 colors (white, black, grey, green, blue, red, and yellow). These colors were chosen based on a previous study of children with autism and their specialists (Shareef & Farivarsadri, 2019).

The survey questions were focused on the following impressions: Comfortable, Happy, Sad, Annoying, Exciting, and Attractive.

2.2. Stimuli

The group of colors used in the survey is shown in Figures 1 to 3.



3. Results and discussion

People use colors in their lives in many ways to obtain aesthetics, comfort, and psychological motives. A study on hospitals in India showed that the colors of the walls in hospitals have a significant positive impact on the patient's well-being and psyche and that colors not only add a physical appearance but also help in waving gestures. Psychological and recovery of patients in hospitals. This study showed that India tended to apply attractive colors in hospitals because hospitals that apply the usual colors and bad design harm the wellness and health of patients, while hospitals that used good designs and colors on their walls have high and effective recovery rates (Anshory & Ismail Ahmad, 2019).

The result of the study is color is one of the main elements of interior design and the quality of the visual environment has a positive impact on patients' sense of well-being in hospitals and healthcare buildings. Colors affect the performance of hospital staff and the recovery of patients. The color creates a sustainable environment in hospitals, and the result of the study is that the pale yellow color and the silver-reflected floor have a positive effect on patients' well-being and recovery (Elqahtani & Elgizawi, 2015).

Each color has a positive and negative impact in terms of psychological, emotional, and physical. The appropriate colors are chosen for each space in the psychiatric hospital because it has psychological and physical reactions that affect the patient and the treatment process. The result of the study is that it is important to understand and study the psychology of colors and the method of color therapy because it has a great impact on the psyche. These colors show their effect on patients and often have a positive effect. It was found that yellow colors can activate brain cells, White and blue have great positive effects on patients, as it gives a feeling of safety, relaxation, and comfort, and keeps negative thinking away. The green color helps the patient to control his emotions and keeps him away from anxiety and also helps the patient to return to normal and recover from the disease (El Shamy, 2021).

The result of the current survey was presented to interior design students investigating color impressions on children with autism. Figure 4 shows the students' responses about their belief towards white color impression and showed that 85.7% of them believe that the white color can make autistic children happy and that 100% makes them comfortable in the case of applying white color to the walls of the seasons. As for 42.9%, they believe that the color white can give the impression of excitement.

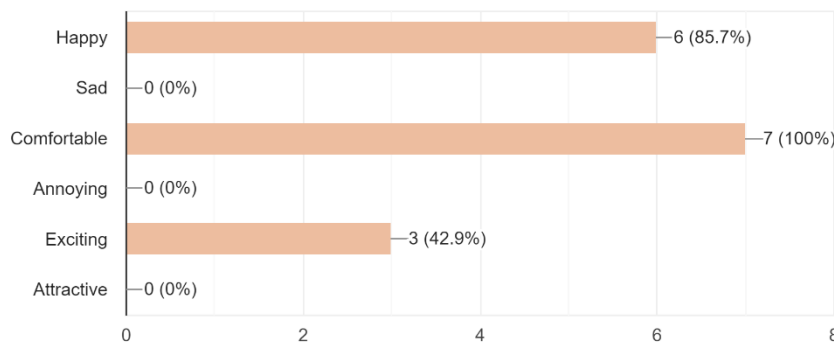


Figure 4 Percentages of impressions on White color

The result of the second question of the questionnaire was about the impression of the black color on autistic children through the opinions of the students and their belief that 85% of them agreed that black has a sad impression, 57.7%, this color may be attractive to children. 42.9%, though the black color might give an annoying impression, and 28.6% thought that it was exciting. These results are illustrated in Figure 5.

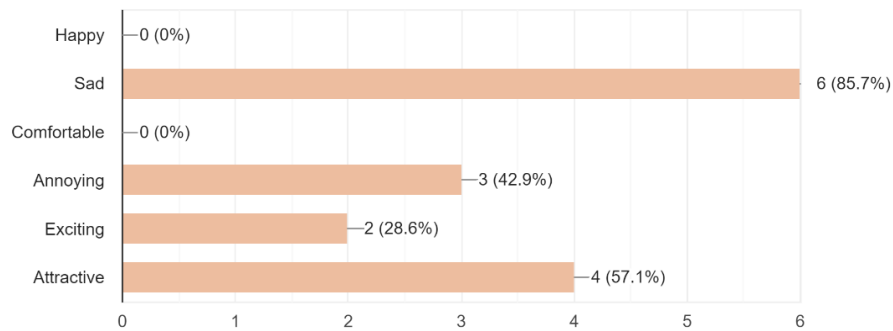


Figure 5 Percentages of impressions on Black color

The results of the third question in the questionnaire about the color grey are illustrated in Figure 6 where 71.4% of the students thought that the grey color had a happy impression and 71.4% were comfortable for autistic children. The rest of the students think grey is 57.1% exciting and 28.6% attractive.

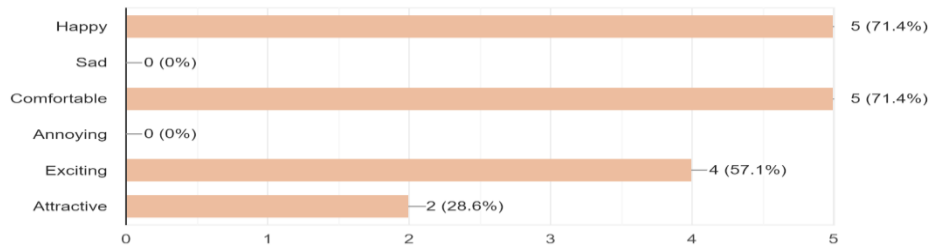


Figure 6 Percentages of impressions on Grey color

Figure 7 shows the result of question 4 in the questionnaire about the impression of green on autistic children. The result showed that some students believe that green gives a happy impression with 42.9% of the participants on autistic children, and 57.1% believe that the color gives the impression of comfort. In addition, some students believe that the green color gives the impression of annoying and exciting by 14.3% and 57.1% give an attractive impression.

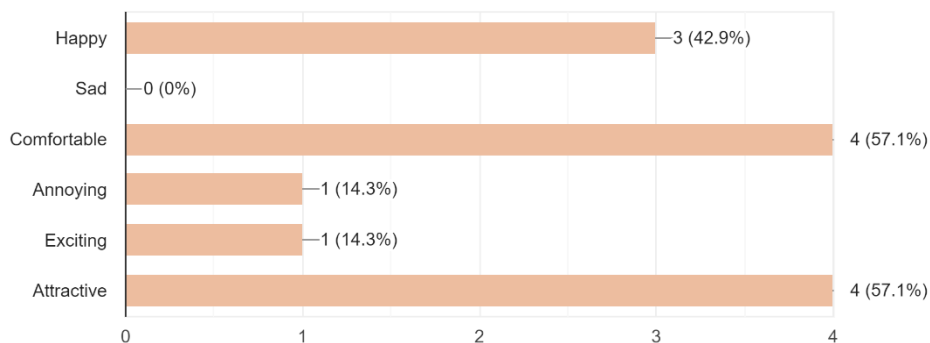


Figure 7 Percentages of impressions on Green color

This illustrates figure 8 shows the result of the fifth question in the questionnaire about the impression of the color blue on autistic children through the students' beliefs and opinions. It appears that 57.1% of the blue color gives the impression of happiness and comfort, and 71.4% of the impression that the blue color gives on autistic children is attraction. On the other hand, some students, 28.6%, see blue as annoying and 14.3% see it as exciting.

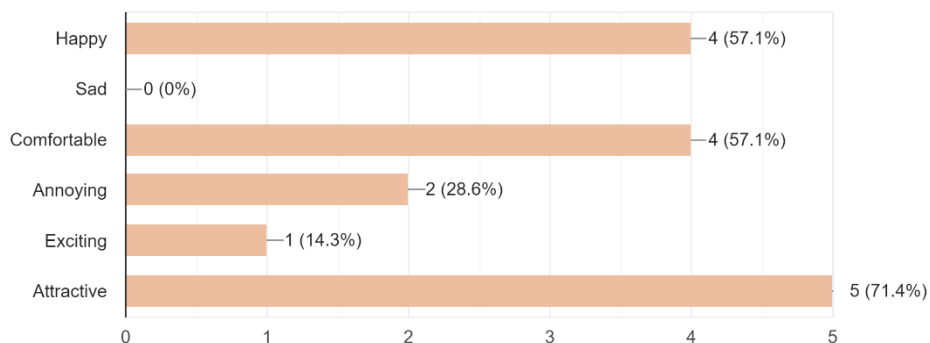


Figure 8 Percentages of impressions on Blue color

Figure 9 shows the impression of red on autistic children. 71.4% of students think that red gives the impression of attractiveness, and 57.1% of students think that the color red gives the impression of being annoying and excited. In addition, 28.6% of students believe that the color red conveys the impression of happiness, and 14.3% think that the color red conveys the impression of comfort.

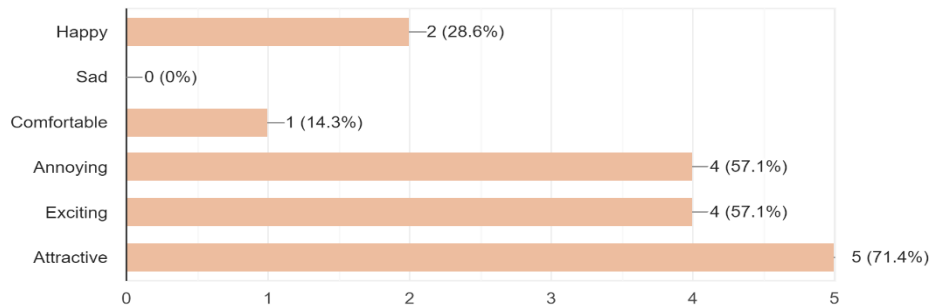


Figure 9 Percentages of impressions on Red color

The last result of the questionnaire is shown in Figure 10, where this result shows the impression of yellow on autistic children, with 71.4% of students believing that the impression of autistic children on yellow is attractive and exciting, but 28.6% of them believed that the color Yellow gives the impression of comfort and annoyance at the same time. In addition, 42.9 percent of the students believed that yellow could give the impression of happiness.

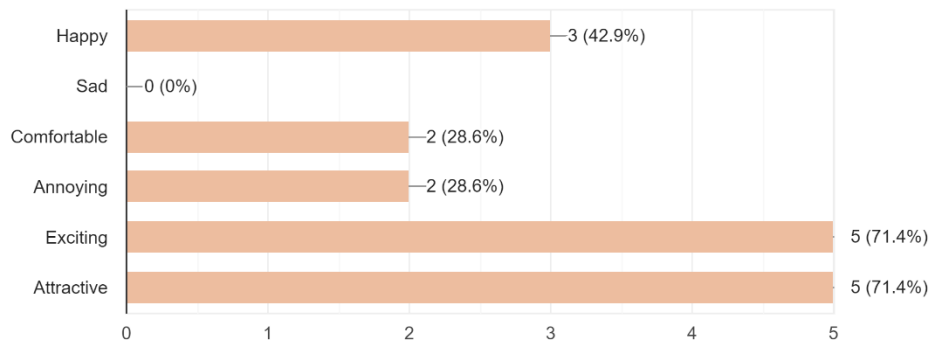


Figure 10 Percentages of impressions on Yellow color

The current investigation showed that color is an essential element in interior design and that color can play a major role in influencing the psyche of patients in hospitals or children with autism. The study showed that color can improve the psyche of patients and helps them recover quickly. These colors can reflect on their psychology positively and sometimes negatively. Moreover, hospitals began applying colors to hospital departments to raise the level of well-being and wellness for patients. As a result of the questionnaire, it became clear that one color can give more than one impression on the psyche, and these impressions differ in terms of positive and negative. It was also an inference that the colors that had the most positive impressions from the students' beliefs and the percentages shown by the graph are (white, grey, green, and blue), and usually, these colors have a positive effect and improve the psychological. As for the black color, most students agreed that it has a negative effect and gives the impression of sadness. In addition to that, the red and yellow color range between positive and negative.

While comparing the results of this research finding with previous research studies. It was found that there is an insignificant difference regarding the impact and impression of students/designers towards colors on the psyche of autistic children and psychiatric patients, but it was agreed that one color can give an impression and affect the children's psychological state and it can be a tool to improve and treat their psyche. The result of the survey showed that more than 70% of teachers of autistic children believed that grey, green, blue, and white had a positive effect on autistic children in the classroom, while red and yellow harmed them (Shareef & Farivarsadri, 2019). In addition, they preferred cold and secondary colors over primary colors. It was found that avoiding excessive colors is important in indoor environments because of their negative impact on children with autism, causing anxiety and distress. Suggest choosing neutral and calm colors.

Colors have many effects on the patient from an emotional, psychological, and physical point of view, and each color has different negative and positive effects for everyone. These findings were found almost agree with current research findings.

4. Conclusions

In this study, it was concluded that the interior environments of autistic children and psychiatric patients need to be studied and understood in the application of appropriate colors that can affect them and the process of their interaction and treatment. One color can have several effects that differ from one child to another, as well as for psychiatric patients. It is necessary to understand their psychology so that the colors are applied correctly. Also, the result that became clear from the survey conducted that there is no specific color that may constitute an attraction or preferred by autistic children and psychiatric patients and that autistic children's impression of colors differs according to each child, as there are individual differences between autistic children and between psychiatric patients. In addition, it was noted that the variety of colors sometimes and their abundance in the walls or furniture may constitute a distracting factor. It is possible to provide a special color palette for this group of children and patients inside rehabilitation centers for children with autism and in psychiatric hospitals, but not to make it fixed inside the halls and make it flexible to suit their needs.

In this study, it is recommended that various colors would be applied in interior environments, but this should be the appropriate approach. The main aim is to provide autistic children with appropriate and non-distracting interiors. In addition, they use of colors of cool hues and avoid dark colors that can cause inconvenience and lack of comfort in the place. It was also recommended to researchers in this field to conduct a study and make a real and realistic experiment on autistic children and psychiatric patients in hospitals to obtain real and more accurate results about the effect of colors on them to choose then the appropriate colors for the internal environments of autistic children and psychiatric patients.

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