

## USERS PERCEPTION OF THE EFFECTS OF COLOR ON WELLNESS AND HABITABILITY IN INTERIOR ARCHITECTURE

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### ABSTRACT

Psychologically, colors can produce certain feelings/ reactions, likewise in architecture, the colors of a building influence how users of the building feel. This in-depth study identified values of different colours used in the interior architecture of two purposively selected public buildings in Afe Babalola University, Ado-Ekiti (ABUAD). Effects of the colors on its users were analysed via descriptive statistics after randomly sampling 385 respondents. Slovin's formula was used to get the population comprising staff and students of ABUAD. The study which employed a mixed method approach relied on a questionnaire, unstructured interview alongside observation as the primary data, and print materials among others. Findings from the study indicated that colors and good space complement other structural attributes for habitability while structural designs can also be used to strengthen human self-efficacy; needed as a form of wellness. Concerning colors used in the interior architecture, the visual comforts of staff and students in ABUAD have not been fully met. ABUAD Managements are therefore advised to consider the well-being of staff and students by addressing structures having dull and unimpressive colors; which are also poorly projecting her brand image. Architects/ Interior Designers should consider visual comfort when choosing colors of buildings for sustainable and maintained use.

**Keywords:** Color, Habitability, Interior Architecture, Public Building, Visual Comfort & Wellness

## BACKGROUND

One of the essential roles of architecture is to provide built environments that sustain the occupants' psychological well-being. This role is even more important because, in modern society, more than seventy percent of a person's lifespan is spent indoors (Aleksandra, Aleksandar, Dušan, Ana, 2019). Color is an integral element of our world, not just in the natural environment but also in the man-made architectural environment. Color in architecture does not only represent colours, decorations or aesthetics but it is also used to create and represent an impression in the design area and also as a virtual barrier between rooms or design areas. This is due to the process of the human brain being able to accept and judge the atmosphere objectively and subjectively. In addition, the use of color in a design also affects the behaviour, character, comfort and user experience.

The impression of a color and its message is of utmost importance in creating the psychological mood or ambience that supports the function of a space. The colors of any public building are an important environmental factor that affects not only users' state of mind and satisfaction but also the motivation and performance of individuals. When designing an interior space, it is necessary to have experience in working with colors.

An Interior Architect or Designer must understand the impact of colors, and the psychological effects caused by colors on people,

and also know where to use a certain color to obtain a combination ideal for each situation.

Combining colors and using them in interior architecture can result in a positive or negative impact on space users. A building's interior can exude comfort and wellness; while on the other hand, colors can cause a feeling of discomfort. Color is a powerful tool in interior architecture, they can create various illusions for habitability in a space; therefore, a small room may seem larger or smaller if a wrong choice of color is made. When architecture does not permit changes and flexibility, one of the most important solutions is colour (Aleksandra, Aleksandar, Duan, Ana; 2019). Undoubtedly, habitability refers to the quality of a house being fit to live in. It must be suitable to support living to the extent that humans will be able to perform their daily routines while feeling protected or well-sheltered.

Habitable rooms receive and possess good daylight; the colors of their interior walls can influence learning behaviour or be strategically used to support learning. Red improves performance in detail-oriented assignments; in contrast blue improves performance, more importantly, if the task is about creativity (Koen, 2021). In addition, for a family room to be habitable, Koen (2021) proposes a design quality, maintaining that, apart from colors, such a room must have access to direct sunlight for at least 2 hours per day. This timing and colour strategy is not too much when it comes to wellness/ fitness as regards interior architecture.

For emphasis, wellness is the state of being mentally and emotionally sound, creatively balanced and environmentally in the right senses which can be promoted through a quality built space. It is a known assertion that health is wealth, it is when human beings are living comfortably in a good shelter and their psychological environmental needs ensure that they will be productive. It is within the realm of these facts that this study sprang forth with the main aim of conducting an in-depth study on "Users' Perception on the Effects of Colors for Wellness and Habitability in Interior Architecture".

The user's emotional response to colors was explored to help Interior Architects and Designers choose suitable colors that would promote users' sense of comfort and wellness. The scope of the study is restricted to selected public buildings in Afe Babalola University, Ado-Ekiti (ABUAD). Thus, the research question that guided the study was: what are the users' colour preferences concerning habitability to promote wellness? As hinted before, it is when human basic needs are met such as emotions, comfort, and shelter among others that they would exhibit meaningful impact and be productive. Logically also, one then tends to reflect that, has the emotional needs of the users been met, notably through colors adopted in the interior architecture of selected public buildings in ABUAD. Hence, the essence of this survey research.

### **Color and Human Senses**

Color is a powerful communication tool used to

signal action, influence mood, and even influence psychological reactions. Certain colors have been associated with physiological changes, including increased blood pressure, increased metabolism and eyestrain (Kendra, 2022). Colors directly affect the mood of a person, and therefore play an important part in life. Humans are a visual creature that gets about 87% of all sensory information through the world of colors (Krstić & Rađelović; 2013). It has been proven that a person reacts differently to certain colours and that colours can cause different emotional states in humans. Colors have a powerful impact on people and to a great extent colors directly affect their habits and life in general. Each person has his/her range of favorite colors that reflect their personality (Krstić & Rađelović; 2013). According to Johnson (2007), color does affect mood by producing certain chemicals and stimulating different feelings such as hunger.

For example, blue can make one feel calm because it releases calming chemicals, and red can make one hungry because it is an appetite stimulant. Yellow can make one feel irritated, and it is a fact that people lose their temper most in yellow rooms. However, pink is tranquilizing and can make one feel weak. In conclusion, Johnson says that depending on the colour, one's body can do things (like producing chemicals) that cause a certain emotional reaction (mad, sad, etc.). Yet another idea by Eric, John, and Paraag (2007) about color psychology is that color has both a physiological and psychological effect. For

example, green makes people feel comfortable because it relaxes their muscles and makes them breathe deeper and more slowly.

Furthermore, blue lowers blood pressure, which makes one feel calm. Eric, John, and Paraag conclude that colour affects one's mood because of what it does to the body. Color affects how customers feel and can help boost appetite, increase turnover, give a sense of happiness, and make the space feel larger and more intimate. Color can also have a negative influence on the customers, so it is important to know how your color choice may affect the message of your establishment.

The color scheme you choose to design the interior of a building has a big impact on the users, how they feel and how long they spend in the building (Dala, 2022). Understanding the role color plays in bringing people in and keeping them there is important to any public building owner such as a cafeteria, classrooms and auditorium. Color helps create a learning environment that improves visual processing reduces stress and challenges brain development through visual stimulation, relationships and pattern-seeking. Using color to align the body's response with the time and purpose of the room is an important and easy way to improve the health and well-being of students, teachers and everyone who needs to spend time in a public built environment. This research examined different colors and how it affects users of public buildings at a point in time.

### **Humans in the Built Environment: Sensual and Spatial Experience**

The in-depth understanding of one's environment and surrounding objects is often referred to as 'spatial perception' (CogniFit, n.d.) or 'spatial orientation' as also established by several scholars. The built environment is about space which defines shelter in any form that can be thought of. Its essentiality is obvious in the sense that it is indispensable, especially as one of the basic needs of humans in life. Car parks, Malls, Academic/ Religious houses, Sports or Entertainment and relaxation centres, all depict the built space.

Scholars even advance the concept that other man-made structural pieces that involve architecture such as dams, bridges, gutters/ drainage systems and roads among others equally point to the built environment. Certainly, architecture is more of structuring and building which also entails creative design; the process involved (in crafting the structure) is not a child's play. *"If we accept the fact that the built environment will continue to be needed and constructed to provide man with shelter and comfort, then it follows that at the outset we should have a critical ecologically responsive approach to its design"* (Yeang, 1980).

Apart from this approach, a psychological understanding of color with space is also important. From the process of design, colour utilisation and space formation comes in; while

color is not only for aesthetics but can also aid therapeutic interventions, 'Space' on the other hand, is the limited or unlimited expanse in which everything in the structure is located. It is also an empty area often bounded in some ways for a desirable structure. Architectural designs for a built space can take any form, but, the duo color and space appeal to human senses for certain psychological/ nervous experiences.

Ordinarily, the nervous system is a network of cells that transmit nerve impulses throughout the body to the brain, muscles and organs (Bravolol, 2022). Impulse in this regard, according to Frey (2021) is a sudden force. It should be noted that such could depict uneasiness when the nerves are not relaxed or calmness/ excitement especially when nerves tend to be at ease. The smooth coordination of the nervous system that passes information signals to the senses is essential to enjoy wellness and, this can be aided through the proper use of colors and good space in the design of a built environment. Humans desire ample space that is adequate within a structure to get right his/ her daily activities; if the space is choking, of what use is it and if too big, what is the impact?

There would rather be a sense of uncomfortableness which is improper for habitation's sake. It is on this premise that Yeang (1980) and Tania (2019) advised a design strategy that is anticipatory in nature and likewise offers both physical and mental comfort for the senses. He (Yeang) clarified that the decision

a designer makes in the present time, as regards architecture, may not have an instantaneous effect on humans, his society and the ecosystem but could later impact future systems and quality of life which can either be positive or negative. Resultantly, "*Architecture can be used as a force for good, which creates spaces which are not only beautiful and sustainable, but healthy for end users*" (Tania, 2019).

These are part of the focus of 21st-century architecture, often characterised by beauty, space management and technology, conspicuously in urban settings. Technology has been so embedded in housing that artificial intelligence currently has a role to play. It is meant to bring more comfort to human experience and habitability. The advanced worlds have an edge in this perspective while developing nations like Nigeria are improving at a steady pace. Socio-culturally, artificial intelligence might not power a good number of houses in Nigeria but, the features of colours and space are still being relied upon and adopted. The proper use of these features is another area of great concern to improve habitability as they also affect health and wellness.

**Architecture in the Serene Environment of ABUAD**  
Afe Babalola University is an institution located in Ado Ekiti. It is appreciated for its serene environment with fantastic beautiful buildings, architecture, phenomena structural design cum great interiors and, great landscaping. Some of the great structures include the Amphitheater, ABUAD Multisystem Hospital, White Rock, and Alfa Belgore Auditorium. The majority of the

building's interior is awesome and conducive for both staff and students of the institution.

The interiors of these great structures were executed considering the users' experience in mind. This makes ABUAD an institution to experience as a student. Despite all these features, it is still important to determine if the emotional needs of the users have been met especially in terms of colours used for the buildings, this prompted this study. However, the university runs a bachelor's degree program in Architecture. The Department is well-equipped and the students are well-trained by highly qualified lecturers. The introduction of this department will help train students who will create well-designed and functional architectural masterpieces that exude a sense of comfort and enhance the wellness of users in Nigeria and beyond. The interior architecture of two well-patronised public buildings in Afe Babalola University is showcased below.



**Figure 1:** Picture showing the interior of "Cafeteria I" in Afe Babalola University  
Source: Researchers' fieldwork 2023



**Figure 2:** Picture showing the interior of "Alfa Belgore" in Afe Babalola University  
Source: Researchers' fieldwork 2023

### Theoretical Underpinning

The theory of Self-efficacy was adopted as the theoretical framework for this study. It is one of the theories in psychology that is applied to learning and studies i.e. academics. The theory stresses an individual's views or beliefs about his or her capabilities as a factor in attaining a goal. In academic settings, a key goal is to excel in studies; but a sound emotional and psychological state of mind is essential for such success to take place. This factor is key to the extent that it was listed among other sources of self-efficacy by Bandura (1997); from inference, there is a close link between self-efficacy (that dwells on emotions with psychology) and success. *"It is difficult to have a healthy level of well-being when you are struggling with anxiety or depression... but it is certainly much easier when you are healthy and well"* (Ackerman, 2018). Yokoyama (2019) did not hesitate to sum up that the thought of fear, pain and fatigue may have harmful effects on self-efficacy.

However, motivation, according to many scholars is also said to be deeply linked to self-efficacy. Motivation is the drive or passion that keeps one moving to attain a set goal, hence, “*when an individual is highly motivated to learn and succeed, they are more likely to achieve their goals giving them an experience that contributes to their overall self-efficacy*” (Ackerman, 2018).

This theory thus is considered fit for this study because the scope of the research covers an academic environment - Afe Babalola University, Ado-Ekiti (ABUAD); especially the effects of colors used in the interior architectures of selected public buildings in this school. Colors have a psychological impact; the use of the wrong colors can create fear, boredom and unnecessary anxiety which obviously can hinder learning and studies. Concurrently, a well-planned built environment with good space and colours, among many other structural configurations is desirable.

An academic setting with these qualities will motivate students to learn and also the staff to be productive. No sane human being in the right senses will prefer to dwell in an environment or stay in a house that does not portray a sense of comfort and habitability. These are cogent factors that should not be trivialized in any workforce or setting, let alone a citadel of learning. Therefore, from a theoretical point of view, the self-efficacy of staff and students, needed to excel in an academic environment, can also be strengthened through good architectural design and structures.

It is based on the fact that this study anchored on ‘self-efficacy’ as the theoretical framework. It is worthy of concluding that the theory was proposed by Albert Bandura, a Canadian-American psychologist, in 1977 from his social cognitive studies and discoveries (Lopez-Garrido, 2020 & Yokoyama, 2019).

According to the research of AL-Ayash, Kane, Smith, and Green-Armytage (2016) about secondary school students’ perception of colours, students had positive emotions (e.g. happiness, hope, joy) with bright colors like blue, white, yellow, etc. and negative emotions like (sadness, fear, shame) with black, grey and other dark colors. Another study examined college students’ emotional associations in Australia. Kurt and Osueke (2014) found that bright colors draw out positive emotional associations but dark colors elicit negative feelings.

Mikellides (2012) in his study concluded that blacks shared both positive and negative responses among young people and mostly assist human beings to adapt to new environments. Blue is perceived as an intellectual and logical thinking motivator that encourages clear thought and increases focus and because of this, it is advised to be used in classrooms or study spaces. It is a calming color because it reminds us of seawater and the sky.

The impact of light and color on psychological mood in work environments was investigated

by Küller et al. (2006) in a large-scale study that involved 988 persons from different countries. The presence of some colors, in comparison to a no-color, or neutral-color condition, resulted in a more positive worker's mood. The use of very saturated colors, on the contrary, had a negative influence on mood. Jonauskaite et al. (2016) investigated context-specific color preferences comparing abstract color preferences, imagined interior walls, and imagined t-shirts. They used an unrestricted color selection approach with three-color dimensions (i.e., hue, chroma and lightness).

Abstract colors were preferred with more chroma, whereas lighter colors were preferred for walls, and darker colors were preferred for t-shirts. Eric, John, and Paraag's (2007) main point about color psychology is that color has both a physiological and psychological effect. For example, green makes people feel relaxed because it relaxes their muscles and makes them breathe deeper and more slowly. Furthermore, blue lowers blood pressure, which makes one feel calm. Eric, John, and Paraag (2007) concluded that color affects one's mood because of what it does to the body. This study examined the effect of interior color on wellness and its suitability for the habitation of users in an Institutional environment. Various scholars have worked on different areas of color perception and psychology but little or no research has been done to determine the extent to which interior colors can affect the wellness of the users as well as the suitability of the color for the habitation of users.

## METHOD

The study is both quantitative and qualitative, thus employing the mixed method approach which relied on unstructured interviews, questionnaires and observation as the primary data collection methods. Quantitatively, descriptive statistics was used for the primary data obtained from the survey. The questionnaire was administered randomly, to staff and students (i.e. respondents) in Afe Babalola University, Ado-Ekiti (ABUAD) while the qualitative aspect relied on the case study; an in-depth enquiry on a single or particular phenomenon. In the assertion (Patton, 1990 p. 203), a case study is helpful because it allows having "*direct, personal contact with and observations of*" a particular setting and situation for a thorough understanding. Subtle clues and hidden information that can assist the study can always be detected in case studies while assessment of the physical environment is assured (Patton, 1990, Stake, 2000). "*... case study research usually involves all three strategies of interviewing, observing, and analysing documents. On-site investigation of the case involves observing what is going on, talking informally and formally with people, and examining documents and materials that are part of the context*" (Merriam, 2001).

In this research work, two public buildings were selected as a case study; because they are well-known and used by Staff and students: 'Alfa Belgore' and 'Cafeteria 1' (Plate 1 and 2). In this study, a combination of field notes, audio, video

and digital photography were used to record observations, unstructured interviews and the physical environment. The recordings were later transcribed into words for easy analysis; through the researchers' observations over some time, it was easy to study the relationship between the users and the selected buildings in Afe Babalola University, Ado-Ekiti, in a real-life scenario. Relevant documents: Journals, Conference Proceedings, and National daily reports among others were also obtained as secondary materials. This data collection approach and the multiple sources of data gave room for quality information about the study (Stake, 2000).

Apart from that, it also created the chance for generalisation, contextualisation and credibility of data. Succinctly, this study adopted this mixed method approach because it provides a better and deeper understanding and also a clearer picture that can enhance the description and understanding of the study. The total population for this study is 10,491; delimited to the staff and students of Afe Babalola University, Ado-Ekiti (ABUAD) community. The staff of ABUAD comprises both academic and non-academic personnel and are 1,406 in number while the students are 9,085.

#### **Sample Size and Sampling Technique**

The sample size for this study is 385, derived using Slovin's formula. A purposive sampling technique was adopted to choose the sample based on their use of the selected public buildings

in ABUAD. Thus, the calculation is:

$$n = N / (1 + Ne^2)$$

Where,

n= sample size

N= given population = 10491

e = error of margin = 95(0.05)

$$n = 10491 / 1 + 10491(0.05)^2$$

$$n = 10491 / 1 + 10491(0.25)$$

$$n = 10491 / 27.23$$

$$n = 385$$

385 respondents comprising both staff and students were sampled out of the total population (10,491); this sample size was considered adequate because of time constraints and the cost of sampling a larger population.

#### **Validity and Reliability of Research Instrument**

The face and content validation of the questionnaire was conducted by experts in the fields of Psychology, Architecture and Visual design being the three major areas of this study. The study instrument was pilot-tested using forty (40) respondents not included in the study. Cronbach alpha reliability estimate was used to establish the internal consistency of the item comprising the Likert scale. The result yielded a .alpha reliability estimate of approximately 0.7, showing an appropriate internal consistency. Mzomwe, Calkin & Respicius (2019) citing Abe and Gbenro (2014) maintained that the reliability coefficient of a research instrument should be within the range of 0.5 - 0.85 and above. The .alpha reliability result is therefore valid and the research instrument is adequately reliable.

## RESULTS AND DISCUSSION

The responses of the respondents on the close-ended questionnaire based on the research question were analyzed using the mean score, frequency distribution, and percentage in a tabulated form to aid proper interpretation. The data visualisation tools were employed (where necessary) for the presentation of data and to facilitate easy comprehension. The questionnaire also employed a 5-point Likert scale model, for easy interpretation and justification for the statistical analysis of the retrieved data. Three hundred and eighty-five (385) copies of the questionnaire were distributed; 303 were duly retrieved. This means an approximately 79% retrieval rate, which is adjudged excellent and adequate for the validation of data.

### Question 1: How do the Colors make you feel?

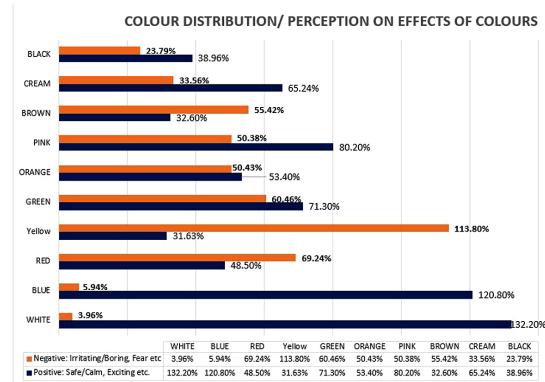


Figure 3: Chart on colors in relation to respondents' emotions

Source: Researchers' Fieldwork, 2023

There is a sharp difference in the psychological effects that colors have on the Staff and students of ABUAD (Fig. 3) The orange colored bars represent the percentage of the negative effect a color has on the users while the Blue colored bar

represents the percentage of positive effects of a color. The respondents chose as many answers as possible to express their views. Hierarchically, White, Blue, Pink and Green have huge positive effects while the first two: White (132%) and Blue (120.8%) top the chart.

Psychologically, on the positive side, they feel: safe, calm/relaxed, happy and a sense of affection. In contrast, they felt frightened (fear), bored/ weak, and Drowsy and irritated; thus, have a strong dislike for Red (69.2%) and most especially color Yellow (113.80%). The negativity about Yellow belonging to the family of warm colors simply validates the assertion of Johnson (2007) that Yellow makes people feel irritated they lose their temper most in yellow rooms. Logically, it is then easy to also reason that self-efficacy in humans would be badly affected in rooms painted with warm colors especially Yellow and Red (Fig. 3). From this summation, it is very clear why none of the respondents liked Orange (also a warm color) as their best color (Fig. 4).

### Question 2: What is your Best Color?

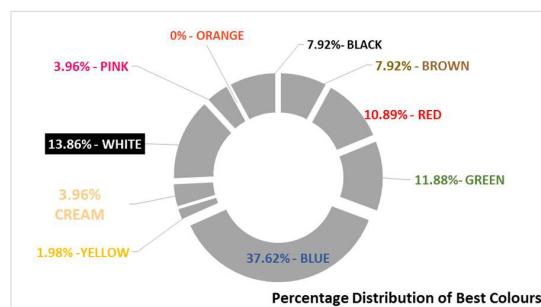


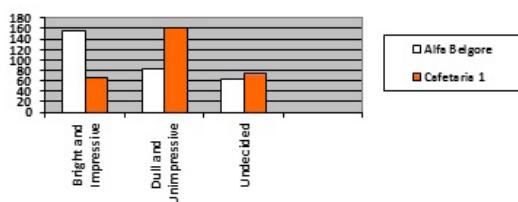
Figure 4: Color and Individual's Choice

Source: Researchers' Fieldwork, 2023

To understand the relationship between users' favorite color and their public buildings' interior color preference, this may also be a factor to consider for effective color design of a public building. According to Stephen and Meong (2015), Color preferences have long been known to differ from one person to another but, unlike color meanings, are much more consistent among individuals across different cultures.

From the result, it can be seen that 114 (37.6 %) out of the respondents chose color Blue as their best color, followed by white with 42 (13.9%), and 36 (11.9%) out of the 303 respondents chose green as their best color. Furthermore, 33 (10.9%) out of the 303 respondents claimed red as their best color, followed by brown and black having responses of 24 (7.92%) respectively. The least favorite colors are pink and cream with a response rate of 12 (3.96%) and yellow at 6 (1.98%). The question therefore is, does there exist a relationship between the users' favourite color and the public building interior color preference?

**Question 3:** Describe the Interior Colors of "Alfa Belgore" and "Cafeteria 1"?

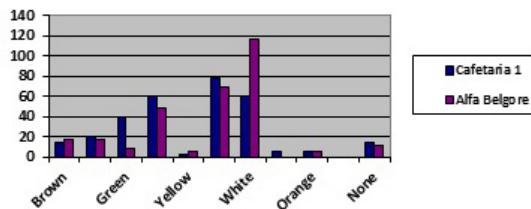


**Figure 5:** Opinion on the Interior Colors of "Alfa Belgore" and "Cafeteria 1"

Source: Researchers' Fieldwork, 2023

The result shows the color preference of staff and students of Afe Babalola University for both "Alfa Belgore" and "Cafeteria 1". 156 (51.5%) of the respondents admitted that the interior color of Alfa Belgore (about Figure 2) which is a combination of cream and white is bright and impressive while, 161 (53.1%) feels the latter having a combination of green and orange color is dull and unimpressive as shown in figure 1.

**Question 4:** Color Preference for the Interior of "Alfa Belgore" and "Cafeteria 1"



**Figure 6:** Opinion on the Interior Colors of "Alfa Belgore" and "Cafeteria 1"

Source: Researchers' Fieldwork, 2023

The chart above (Fig. 6) shows the color preference of staff and students of Afe Babalola University for the interior of the selected buildings. For "Alfa belgore", 117 (38.6%) out of the 303 respondents preferred colour White, 69 (22.8%) chose Cream and 48 (15.8%) preferred Blue. The combination of the three colors is the present interior color of the building as shown in Figure 2, this confirms the claim of the respondents that the interior colors of the building are bright and impressive (Fig. 5). On the other hand, 78 (25.7%) of the respondents chose a Cream color for the interior of "cafeteria I", 60 (19.8%) prefers color

White and 60 (19.8%) chose Blue as against the present interior color combination of the building (about figure 1).

**Table 1:** Habitability and Essence of Color  
**SA=** Strongly Agreed, **A=** Agreed, **U=** Uncertain, **D=** Disagreed, **SD=** Strongly Disagree  
**T=** Total, **M =** Mean, **R=** Remark

(Variable)	SA	A	U	D	SD	T	M	R
The habitability of a house depends not only on structural configurations, but color is also complementary.	222 (73%)	66 (22%)	3 (1%)	6 (2%)	6 (2%)	303 100%	4.62	Valid

Source: Researchers' Fieldwork, 2023

To say that a respondent has a positive reaction towards color about habitability, he or she must at least score a mean value that is equal to 3.0 or above. This is in agreement with the calculation of Mzomwe, Calkin & Respicius (2019) on the midpoint of a 5-point scale. In that regard, the statement in Table 1 above which has a mean of 4.62 is greater than 3.0. It is thus valid and acceptable as positively perceived by the respondents.

Habitability points out a house being fit to live in and despite that structural configurations matter, the essence of color cannot be undermined. The result from the table clarifies the view of Tania (2019) that Architecture can be used to create beautiful spaces that are healthy for users. Reasonably, this is where the effect of color is complementary which is also not only for beauty but healthily to boost self-efficacy in humans.

Simultaneously, a careful study of the results in Figure 3 – 6 proved that the respondents have differences in their taste for colors. The results affirmed that truly man have different sets of favorite colors that reflect their personality (Krstić & Rađelović, 2013). However, Blue is most preferred followed by White then Green (Fig. 4). The reason for this has been explained by Johnson (2007) and Koen (2021). They stressed that blue can make one feel calm because it releases calming chemicals and it also improves performance, notably, if the task is about creativity. From the perspective of psychology (figure 3), the two colors (Blue and White) make the respondents feel safe, relaxed and calm; most especially, color white. Green (Fig. 4) is likeable too because it relaxes the respondents' muscles and makes them breathe more slowly and deeply (Eric, John & Paraag, 2007). In contrast, red (Fig. 3) makes a good number of the respondents (69.24%) irritated and angry while only a few (48.5%) are safe, excited and feel comfortable with 'red'.

Johnson (2007) even added that red can make a man go hungry since it is an appetite stimulant; yet Red (Figures 3 and 4) has its advantages such as improved performance in detail-oriented assignments (Koen, 2021). *"In all sincerity, red is nice – it symbolizes love, Valentine's Day; it symbolizes Santa and everybody likes the yuletide. Of course, it can always be used and appreciated for years, cars and other things but not for housing whether interior or exterior; the occupants of the*

*house are not 'Sango' worshippers...? Even the house of those adoring the 'Sango' deity is not red. Yes, it is not" (Clement, K. A. personal communication, January 22, 2023). These statements expressed freely can always serve as a foundation for understanding the reasons for the respondents' likeness for Red in Figure 4 which same time, created unpleasant effects: boredom, irritation, fear etc. (see Figure 3).*

From the foregoing, all these easily account for the reactions displayed in Figure 5. A large number of Staff and students (51.5%) are emotionally pleased with the interior colours of 'Alfa Belgore'- bright and impressive whereas that is not the case with 'Cafeteria 1'. They (53.1%) would rather prefer (for Cafeteria 1) mainly cream that can then be mixed with blue or white color (figure 6) before it would meet up with their emotional (color) taste. The dull and unimpressive interior color of "Cafeteria 1" must have contributed to the preference of students having their meals as take-away as against eat-in which was observed during the course of the study. Also, Grace, a staff of ABUAD when interviewed (unstructured), about how she feels about the interior colors of "Cafeteria 1", admitted that the color combinations drain her energy and make her feel sick however, the interior colours of 'Alfa Belgore' can always maintain its bright colors.

This is vividly deduced from the results in Figure 4; there is a close link between the users' favorite colors (figure 4) and their preference for the public building interior colors (figure 6). Interestingly, in another interaction with the respondents,

they also affirmed the above-mentioned crucial points subjectively. These unique choices seen in all the results can be ascribed to the fact that colors have both physiological and psychological effects. They affect people's moods because of what they do to the body (Eric, John, & Paraag, 2007) therefore making people react to them differently.

## CONCLUSION

Psychologically, colors in buildings matter as it is associated with visual comfort; when this is intact combined with other factors like quality space etc. wellness is ensured. Blue in most cases is preferred for interiors of public buildings and likewise white color. These colors tend to relax the nervous systems resulting in calmness. Resultantly, built space with these desired colors can be used to strengthen self-efficacy needed by humans in academics and other works of life. For this study, 'Alfa Belgore' and 'Cafeteria 1' were the selected public buildings. Users of these buildings are comfortable with the colors of the former while the latter possesses a color that is dull and unimpressive. It has been unearthed that color is a part of human existence and humans prefer certain colors over others.

This is reflected virtually in everything that pertains to humans, architecture inclusive. Color complements structural settings in the built environment, likewise, good space plays an important role, and these attributes therefore bring about habitability. However, the colors of

'Alfa Belgore' can further be maintained through bright colors especially white and cream while that of 'Cafeteria 1' needs prompt attention. Conclusively, it can be summed up that the emotional needs of the users (as regards the colors of the two buildings) have only been partially met. It is therefore recommended that:

- Enriched visual comfort portrays wellness and should be strategically considered by Architects and Interior Designers when choosing colors while developing any built space. In return, this will promote a sustainable and maintained use of the structure.
- The management of ABUAD should consider the well-being of Staff and students, especially in terms of visual comfort and habitability; thereby addressing structures having dull and unimpressive colors as they are also not properly projecting the brand image of the institution.
- A single color can exude more than one psychological effect e.g. Red can depict blood/danger and concurrently affection/love. Therefore, Designers irrespective of their specialisations or areas of expertise should be cautious in the use of colors. This is to avoid sending wrong visual signals which will eventually lead to unintended wrong impressions/ impacts.
- Lastly, Architects and Interior Designers are advised that self-efficacy matters to all sensible humans. This can be aided via good structural designs which also include colors and space among other attributes. Thus, they should

create designs putting this important need of humans, in plan and mind. They should note specifically that the effects of every design resonate even beyond this present time.

it is important to note that the findings and conclusion from the study may not be generalisable because the users' colour preferences for other public buildings may differ from those of the selected buildings. Due to time constraints only 'Alfa Belgore' and 'Cafeteria 1' were the selected public buildings from Afe Babalola University.

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### REFERENCES

Ackerman, C. E. (2018). *What Is Self-Efficacy Theory? (Incl. 8 Examples & Scales)*. Retrieved from <https://www.positivepsychology.com/self-efficacy/> Accessed 14/01/23

Aleksandra, C., Aleksandar, K., Dušan, R. & Ana, M. (2019). Effect of Color in Interior Design: *7<sup>th</sup> International Conference; Contemporary Achievements in Civil Engineering* (pp. 23-24). April 2019.

Subotica, SERBIA, Doi: 10.14415/konferencijaGFS2019.080

ALI Ayash, A., Kane, R. T., Smith, D., & Green, A. (2016). The influence of color on student emotion, heart rate, and performance in learning environments. *Color Research & Application*, 41(2), 196-205.

Bandura, A. (1997). *Self-Efficacy: The Exercise of Control*. New York, NY: W. H. Freeman and Company.

Bravolol (2022). *Nervous system*. Bravolol Dictionary (Android App) version 7.8.0

CogniFit (n.d.). *Spatial perception*. Retrieved from <https://cognifit.com/science/cognitive-skills/spatial-perception/> Accessed 12/1/23

Dala, A. (2022). *Modern Restaurant Management- Understanding the Psychology of Colour in Restaurant Design*. Retrieved from <https://modernrestaurantmanagement.com/understanding-the-psychology-of-color-in-restaurant-design/> Accessed 18/01/23

Eric, John, & Paraag. (2007). *Color psychology*. Retrieved from <http://library.thinkquest.org/27066/psychology/nlcolorpsych.html> Accessed 19/01/2023

Frey, S. (2021). *Impact of wellness on impulse product sales – ECRM*. Chicago, IL: Nielsen Consumer LLC.

Johnson, D. (2007). *Color psychology*. Retrieved from <http://infoplease.com/spot/colors1.html> Accessed 18/01/2023

Jonauskaite, D., Mohr, C., Antonietti, J. P., Spiers, P. M., Althaus, B., Anil, S., et al. (2016). Most and least preferred colours differ according to object context: new insights from an unrestricted colour range. *PLoS One* 11:e0152194. doi: 10.1371/journal.pone.0152194

Kendra, C. (2022). *How colour impacts moods, feelings, and behaviours. Colour Psychology: Does it Affect How You Feel?* Retrieved from <https://www.verywellmind.com/color-psychology-2795824/> Accessed 17/01/23

Koen, S. (2021). *Architecture for well-being and health – Daylight & Architecture* Retrieved from <https://www.daylightandarchitecture.com/architecture-for-well-being-and-health/> Accessed 11/1/2023

Krstić, H. & Rađelović, D., (2013). Colour as a powerful tool in interior design. *Proceedings Third International Science Conference Balkan colour*, pp. 568-575

Kurt, S., & Osueke, K. K. (2014). The effects of color on the moods of college students. *SAGE Open*, 4 (1), 2158244014525423

Küller, R., Ballal, S., Laike, T., Mikellides, B., and Tonello, G. (2006). The impact of light and colour on psychological mood: a cross-cultural study of indoor work environments. *Ergonomics* 49,

1496–1507. doi: 10.1080/00140130600858142

Lopez-Garrido, G. (2020). *Self-Efficacy Theory* Retrieved from <https://www.simplypsychology.org/self-efficacy.html> Accessed on 10/1/23

Merriam, S. B. (2001). *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass.

Mikellides, B. (2012). Colour psychology: the emotional effects of colour perception Colour Design: Elsevier (pp. 105-128).

Mzomwe, Y. A., Calkin, S. M. & Respicius, O. C. (2019). Investigating Students' Attitude towards Learning Mathematics. *International Electronic Journal of Mathematics Education*. 14 (1), 207-231. <https://doi.org/10.29333/iejme/3997>

Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage

Stake, R. E. (2000). Case Studies. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* 2nd ed., (pp. 435-454). Thousand Oaks, CA: Sage.

Stephen, W., & Meong, J. (2015). The Relationship between Consumer Colour