

Comparative Study of Colors in sustainable housing (Residential buildings in Ahmedabad - Pardis Complex)

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ABSTRACT

Interior elements are form, color, and texture, trying to achieve elegance, efficiency, and optimal workspace. Color or its concept is considered as various dimensions and mechanism. Furthermore, colors are alive factor and they have fundamental effects in quality of residential buildings. Select appropriate color in interior design has aesthetic aspects in the design and more than other factor can transfer the cold air and indoor mundane and monotonous the pleasant and inspiring place and it has substantial effect on inertial efficiency of children. Aim of this research is identifying and investigating color index from interior and exterior architectural space and criteria in order to create appropriate space for more comfort, beauty, quality of houses, programming and optimal vision and study about view of people to select colors. This investigation was comparing in residential building in Ahmad Abad and Pardis complex. The sample test includes 128 people consist 47 buildings in Ahmad Abad and 81 people in Pardis complex. Method of research is descriptive and analyzing and we used library and distribute questionnaire in order to collect data. Results indicated that significant relationship exist between socioeconomic status, age and color. In current research, we compared three class of High-income and low-and middle-income. High-middle class had not any tend to color, however, there is significant relationship exist between low-income class and color. Juvenile in low-income class were fascinated about warm and bright colors. Moreover, the most suitable color for room of girls among years of 10-15-20 and above is pale pink and purple, green and pale orange, lemon, and green; for boys pale yellow and aqua

Keywords: Color, Interior Space, House, Residential Houses

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INTRODUCTION

In 1666 Newton discovered that Pure white light is passed through a prism splits to visible colors. Following, many scientists develop principles in field of identifying colors and their concept. They proposed twelve cycles of color, A trio of yellow colors, blue, red and yellow quaternary, red, orange, purple, blue and green and connections between them, based on squares, triangles and rectangles. Theory color of houses includes principal effect of color. Environmental condition of houses is effective on interior activities. Purpose of this color is interior architecture and improves physical and mental performance of space in order to improve comfort in our activities. The color as separation element of interminable architecture has a great influence on the mood and behavior of building users and emotional and mental condition has affected by color. Use colors from one color space to another space will vary according to the characteristics of the application of psychological needs. Therefore, What the environment offers much intelligence and ability to understand important information recipient (Hoag, 2003). The color should be in a home environment without suffering an environment that improves the visual process, reduce stress, and make the process of intellectual development and it leads to more creativity (Daggeit, 2008). Thus, the effect of color on building and it is important for traditional Iranian cultural architecture. Besides, it is a principal designing of home that has fundamental effect on emotion. Undoubtedly, one of challenging of interior design of house is color and it should be more pay attention by designers and planners in Iran. Consequently, main aim of this research is identifying features of color and using methods for designing standard in interior space. Current research evaluates interior design by variable of color designing in living room, bedrooms, in according to age and gender as a movement is effective, and uses it in order to achieve sustainable house in the future.

Aim of research:

Main purpose of this research is identifying and investigating color index from interior and exterior architectural space and criteria in order to create appropriate space for more comfort, beauty, quality of houses, programming and optimal vision and study about view of people to select colors. This investigation was comparing in residential building in Ahmad Abad and Pardis complex.

METHODOLOGY

In order to answer question of research and test of hypotheses, first we used theoretical base about color in interior space and then investigate was comparing in residential building in Ahmad Abad and Pardis complex. The sample test includes 128 people consist 46 buildings in Ahmad Abad and 86 people in Pardis complex. Method of research is descriptive and analyzing and we used library and distribute questionnaire in order to collect data. Following, we used SPSS 16 and by we analyzed variables by using analytical and descriptive. Therefore, dependent variable is color and independent variable includes individual characteristics, age and education

This research is analyzing and tries to answer following questions:

1. What color to paint the interior space more affordable housing?



2. What are indicators and benchmarks for primary and secondary colors?
3. Do we use the correct color in the study area were met or not?
4. The age, sex and socio-economic status based on color rather than the views of the people affected?
5. What color to paint the interior space of the housing is used and how much is it repeated?
6. What color to paint the interior space of the housing is used and how much is it repeated?

Hypotheses:

H₁: Significant relationship exists between appropriate color and improve interior design of buildings

H₂: Significant relationship exists between socioeconomical position, age, gender and preference color of people.

FINDINGS

Colors are one of essential factors of houses. We should correct use of color in order to appropriate use of interior spaces, we evaluate three dimensions of FAM (frequency and wavelength of light given); saturated (full of color), brightness (in terms of light and dark features). Furthermore, initial fam includes red color, yellow, blue and second Fam includes orange, green and purple and third Fam includes Orangey orange, reddy orange, purple red, reddy purple, blue purple, blue green (Khakbaz 1993).

Colour Contrast: Compare and contrast the two colors together seven contrasts bottom paint (primary colors, high intensity). Hot and cold contrasts, contrasts of darkness and light; conflicts simultaneously, the contrast quality (purity and color saturation shows), Conflict quantity (large and small and large and small is size and color levels) and each color contrast properties and values of art; visual impact; special symbolic meanings of concepts by understanding the art of color

Color composition: when two or more colors are put together in a way that has special meaning to show a specific order.

Harmony adjacent colors: colors that are adjacent on the color wheel are together like yellow, yellow, orange, Wu orangy is always a pleasant combination

Harmony contrast color: combination of complementary colors and is a dominant color and the other Nag as secondary color is used for emphasis.

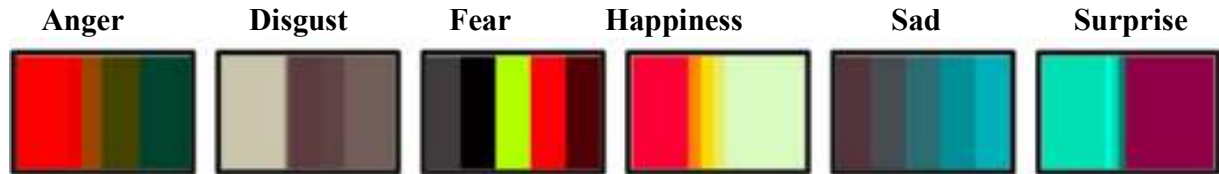
Natural colors: all kinds of creams, the brown, gray

Seasonal color: These colors are very effective on bedrooms. Color is fundamental components of designing and as alive and dynamic factor has essential role on quality of our life.

The link between colors and emotions, creativity is one of the mechanisms (Boden 2009)



Six felt colors:



Most colors are divided into hot and cold categories:

Blue color:

It presents calm and Islamic culture as sacred colors and the blue sky, the place of God's angels and creatures is Wipe sanctity, and is respectful (Ali Akbarzadeh, 1994). Blue improve physical disability (Fisher Zelaeski, 1989) Blue and green are very versatile and are inherently harmonic. People who rest in blue bedroom, they will sleep eight hours in a day.

Red color:

This color symbolizes life, the life factor is the growing of plants, and the expression of emotion (Ali Akbarzadeh, 1994) Red room is not applied in the architecture, red wall turbulent and impatient children and prevents him from concentrating and this color is used for kitchen and plan

Yellow color:

The bright color, clarity, happiness is amplifiers think and places great importance on learning, understanding and knowledge in terms of symbolic relationships and demonstrate knowledge (Ali Akbar Zadeh, 1998)

Green Color:

It is made by mixing blue and yellow. Green is few warm and decreases stress and The colors are gentle and fun work environment (Sabori, 1989) Mild degrees are more versatile and suitable for bedroom and living room so it does not bother the eye is suitable for reading room and library.

Purple color:

A combination of red and blue, sad, depressed and full of dignity (Jean Paul, 1996) and contemplative and mystical meaning and thought the room should be avoided.

Brown Color:

Mixing yellow and dark red and it means motivation, which is a sense of strength and reliability and social characteristics and behavior, and insights toward a balanced society.

Orange color:

The combination of bright yellow and red and the center is among the highest mobility and it makes home warm and friendly (Pak Nezhad).

Black Color:

The darkest color and actually negates your favorite black marker left; final withdrawal of the other colors that color the character. The colors are very disturbed when people with mental



problems and plays a soothing and protective. Black means no color and interior design is challenging the design in black and white room, the flux of modernity.

White color:

This color represents purity and peace and tranquility will make it work and careers (Ali Akbar Zadeh, 1994) the color of purity, innocence, feeling clean, cool and simply. White design attracts attention to the context in order to create a variety of textures and shades of white wall paper is used to further appeal.

Gray: Neutral and the colors are black and white; Good job and not relaxing not anxiety. Olhering says looking gray eyes and nerves and lack of it can cause discomfort. Byrne believes that there is a relationship between color and character, bringing unbalanced character is indicative of one or more colors.

Table 1: Appropriate Color for interior design

Prominent yellowish shades such as bright green, deep purple	Cheerful and energetic atmosphere
Gentle shades of blue and green	Cozy and relaxed atmosphere
Warm shades of red, orange and gold	Luxury space
Smoothing light purple and silver items	Non-luxury space
Warm shades of bright colors	Family atmosphere
Neutral colors	The intimate space
Subtle colors and neutral	Relaxing atmosphere and spirit
White or Black Contrast Design	Modern Home

Color in interior spaces:

Home has spiritual knowledge, truth, spirituality, and Jerusalem House of God. Hence, the residential environment should be the nature of perfection and enjoy a beautiful soul and body and this architecture to achieve optimal quality of color and pattern and It is the realm of human creativity and Islamic Art (Rabeie, 2011)

Color for living room:

This should be a eye-catching color scheme neutral colors are suitable and comfortable atmosphere and comfort make the sector more concentrated with shades works well Like red and golden yellow, thick and cool weather with blue and green colors create a feeling of comfort and joy.



Table 4: Condition of Living Room

Antithetical	Harmonic	Living room
To intensify the color opposite of blue and dark purple to highlight alive and beginning	For you non-Leite paint it yellow, orange and brown to give a natural look	Fluorescent yellow
They have a stimulating mix of blue, yellow contrasting strong tonality Blue Grey	Attractive red highlight	Yellow to Orange
Along with orange, yellow and green, it does a pretty good atmosphere is pleasant and energizing	In contrast, the intensity of red, orange, and an emphasis	Orange light
Mustard yellow and brown	Full color and less color blue, pale green	Light blue
Blue and pink	Golden yellow, orange, brown, increase the attractiveness	Light pink

Kitchen:

Places to eat and orange and red colors are appropriate for the appetite increases. Spectra of neutral colors from dark brown to dark gray felt cozy and warm yellow room makes for Part breakfast.

Table 5: Condition of Kitchen

Antithetical	Harmonic	Kitchen
Blue cabinets and tiles are suitable	Orange balanced living room is warm and welcoming and the effect is milder cream	Light Cream
Pale yellow and green to highlight the contrast	It should be yellow, cream and brown living a glamorous designs	Luteous
Light green and dark green foil background provides the right mix	Pink and; political and purple is used in all details	Pinkish red
Red, green, blue and purple are always a good idea to gracefully	Gray, brown, buff and fit	Olive-green
Purple gray and political balance between rest and excitement helps	Orange, brown and pale aqua comes to life as the highlight color	Gray



Bedroom:

A private space to be comfortable and relaxing atmosphere is a tender and bright colors are the traditional colors neutral, calm nature. Buff yellow or gray neutral colors give the room a modern feel less need Nag orange and red, and can be used multiple colors and designs appropriate harmonic.

Table 4: Condition of Bedroom

Antithetical	Harmonic	Bedroom
Life is a beautiful combination of yellow and green, green grass is used as highlight color	Orange and yellow are next to each other on the color wheel and are good with brown furniture	Lemon yellow
Blue-gray in detail and can be used in furniture	Crimson Red and creates a sense of welcome	Pink
Orange and green living, dynamic contrast	Harmonics are inherently green and blue and yellow furniture is suitable	Green
Green mustard and grade are suitable	Pink and brown furniture scattered without the use of modern atmosphere will reduce gray	White opaque
Color cream and brown as the color emphasis	Use the shiny silver of the degree of hydrothermal	Blue

Bathroom:

Functional spaces are often small spaces and for its bright colors that are used to exaggerate the clean white color, but it are cold and nasty And should be used with other colors does the color green pus expansive space; blue because blue is the traditional choice of contact with the water is very cold, gray atmosphere and should be avoided, but it is very attractive turquoise and purple and gold concentrates to modern space.

Table 5: Condition of Bathroom

Antithetical	Harmonic	Bathroom
Yellow-green tonality is more prominent	Light and bright red mustard space is comfortable and happier	Apricots
Blue and orange are complementary and non Leite your gentle transition makes it strong quality Impact	To add depth, detail, brown, pink and pleasant to use	Orange of orange
Turquoise blue will look very modern	Hot orange and yellow to highlight the details to be used	Pink
One of the hottest turquoise blue and white creates a strong contrast	Full of pink and red colors are strong emphasis and more prominent	White opaque
Cream, orange and brown warmth	Bold blue and pale green and bright and	Blue



and tenderness and affirmation

modern influences to create

Table 6: Effects of color

Effect of color	Color of space	Wall color opposite
Heart of deep space and the space opens	Black	White
Dark space appears	White	Gray
Effect will be mild and warm expression	White	Yellow
Extraordinary brilliance and cold and moves outward	Black	Yellow
The brightness and darkness of space is reduced	White	Red
Space is warm and tends to be more clearly	Black	Red
Shining brighter and have more space and depth	Black	Blue
New blur and depth	White	Blue
Space is purple and the ecstasy and joy	Yellow	Black
Happiness is created in space	White	Yellow
Glitter is created represents a magnificent glory, and wisdom	Red	Yellow
It has stunning eyes, is splendid	Yellow	Red
Burnt and dark space appears	Orange	Red
However, the space gives a yellow color mode	Yellow	Blue
Create a state of anxiety and restlessness	Blue	Brown
Discontent		

Table 7: Paint of floors

Color Space	Paint Flooring	
White	Red	Create excitement and warm atmosphere makes
	Pink	Space, style and romance
	Green	Proven steps and determination
	Violet	Creating grandeur and space makes friendly
	Gray	Create coldness and indifference
	Black	Negation and emptiness is heavy steps



	Brown	Strength and greater resistance
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DISCUSSION AND CONCLUSION

We asked questions about preference color of people and results show that there is a significant relationship between age and gender and socioeconomically position (Components occupation of parents and families and their monthly cost) and it is consistent with test of Friling (1990) because he tested 10,000 children in cross the globe and he found out their preference and acceptance varies according to age. Thus, painting of rooms has essential role on education achievement, increase adoptability, reduce stress, rise return of mind. People should warm colors and vibrant beauty and prosperity as a factor to stimulate a lively life. For the purpose of the proper functioning of such visual beauty, harmony, space and environmental impact and positive mental effect on the design of coordinating colors according to age. Thus, we can use appropriate and psychology of colors unique to young children and will provide a good background in order to improve comfort of children.

Table 1: Test of Variables

Dependent variable	Independent variable	Sig
Education	There is not significant relationship exist between education and color	.790
job statue	There is a significant relationship exist between job statue and color	.047
Age	There is a significant relationship exist between age and color	.027
Gender	There is a significant relationship exist between gender and color	.032



Table 9: Appropriate color for interior design

Bed room	To 10 years for girls and for boys, pink, lavender, light green and yellow Range up to 10 years for girls and for boys, pale green, orange, yellow and light green For girls above 10 years old pale lemon and for boys cream and pale blue The bedroom had become used to the light spectrum to avoid busy patterns during sleep is annoying
Living room	It is recommended to use white or cream color, blue, green, purple and pink together in harmony and furniture can be used
Kitchen	This should lead to the design of energy using orange and red and yellow colors in the decoration, dynamic environment, it will cause "and is the focal point of color (Leoda, 2008)
Reading Room	Where there is a need to focus on green and white mixed with cream and a relaxing atmosphere where you apply red-flowering and creation
Bathroom	White and blue combination creates a pleasant environment (Teylor, 1997)

H₁: Significant relationship exists between appropriate color and improves interior design of buildings aesthetics, creativity, reduce stress, satisfaction and it indicates that it provides comfort. This criterion includes quality in diversity of painting walls of living rooms and bedrooms and kitchens and eventually is approved.

We investigated theoretical base of colors show that achieve to comfort and

H₂: Significant relationship exists between socioeconomically position, age, and gender and preference color of people.

According to the citations, the first assumption was proof that the colors are more vivid and dynamic is a bit different ages children and the use of special colors according to their taste has an important role in their learning style. Therefore, for girls less than 10 year's pink and pale purple and for boys pale green and yellow. For girls under 10 years light spectrum such as green,



orange and for boys yellow and pale green and for girls above 10 years old pale lemon and blue. Moreover, significant relationship exists between socioeconomically and color.

Main purpose of this research is identifying and investigating color index from interior and exterior architectural space and criteria in order to create appropriate space for more comfort, beauty, quality of houses, programming and optimal vision, and study about view of people to select colors. This investigation was comparing in residential building in Ahmad Abad and Pardis complex

In current research, we compared three class of High-income and low-and middle-income. High-middle class had not any tend to color, however, there is significant relationship exist between low-income class and color. Juvenile in low-income class were fascinated about warm and bright colors. Result of the research is consistent with research of Faraei (1994).

Juvenile in low income class were fascinated about warm and bright colors. Moreover, the most suitable color for room of girls among years of 10-15-20 and above is pale pink and purple, green and pale orange, lemon, and green; for boys pale yellow and aqua

Suggestion:

In according to issues above mentioned color of residential houses help us to be comfort in life activities. We should consider principal in order to achieve color identity and can all answer to all needs interior and exterior human environment. Thus, we must have standards of color in residential space and pay attention to quality of beauty.

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