A Comparative Study on Interior Color Preference

By

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INTRODUCTION

0-1. Background of Research and Literature Review

Color has played a prominent part in the architecture of many lands and periods. With color so vital a part of all aspects of modern life, and with unparallel technical resources at hand, architecture may have to come to terms with color[0-1]. What we are still learning is how to live with color in our designs today. However, we live in a world both of form and color, and to ignore one in favor of the other is to work against nature instead of with it[0-2]. Le Corbusier said that color can put into order, prioritize, or unify the final space[0-3]. However, researches on color in architectural education show that there is a severe lack of knowledge about color research among students of architecture[0-4, 0-5, 0-6].

Moreover, certain colors are preferred in different cultures and the meanings associated with color might vary from country to country[0-7,0-8,0-9]. For example, black has been associated with nasty and negatively characteristic figures, and negative emotions[0-10], and sadness[0-11]. In Nigeria, black is used to represent evil and works of darkness[0-12]. According to Akcay et al. [0-9], in China red is an appealing and lucky color; in India it is the color of purity. Around the world, blue is the most popular color and is considered a safe color.

Additionally, Park and Guerin[0-13] concluded that cultures do differ in their preference and meaning of colors. Madden et al. [0-7] did a cross cultural study regarding color meanings in East Asia, Europe, North America, and South America and concluded that blue, green and white are strongly associated with "peaceful", "gentle", and "calming" in all the countries. Furthermore, in some countries, subjects also associated "beautiful" (Brazil, Hong Kong, PRC, United States), and "pleasant" (Austria, Colombia, United States, PRC and Taiwan) with blue, green, and white[0-7]. Additionally, Madden et al. [0-7] concluded that "black and brown were strongly associated with "sad" and "stale" across cultures. Additional meanings of "formal" (Brazil, Colombia, PRC, and Taiwan) and "masculine" (Austria, Hong Kong, the United States) were evident in some countries, indicating both universal and unique meanings for black and brown across cultures.[0-7] Red was consistently associated with "active", "hot", and "vibrant" across all countries. Red conveyed additional meaning ("pleasant") in two of the Asian countries (PRC and

Taiwan)." [0-7]

Jacobs and colleagues[0-14] asked the students subjects from four cultures (Japan, People's Republic of China [PRC], South Korea, and United States). All four cultures associate blue with high quality and red with love. Purple is associated with expensive for subjects from Japan, PRC, and South Korea. In contrast, respondents from the United States associate purple with inexpensive; Black is consistently associated with expensive and powerful across cultures.

Additionally, Wenzel, Langer, Kassar and Bencze[0-15] define color preference as the tendency to prefer certain colors over others. Some colors are perceived as pleasant and attractive, while others appear less pleasant or neutral, sometimes even repellent.

Furthermore, in 2009, a cross cultural study[0-16] regarding interior color preference was conducted and it was concluded that there is not much color variety when Japanese people are choosing colors for their bedroom walls and they are all focused on white more so than others.

Moreover, Miho Saito has done a cross cultural study[0-17], and concluded that Japanese people like white (more so than other respondents). In addition, Gunnerod[0-18] concluded that Japanese consumers prefer white, whereas consumers from Hong Kong prefer red. T. Kanda[0-19] conducted a cross cultural study among Japanese kindergarten pupils, Japanese university students and foreign university students from Asia and concluded that orange is the most favorable color for candies and black is the most unfavorable one. Moreover, he concluded that preference of Japanese kindergarten pupils and Japanese university students are similar but differ from that of foreign university students from Asia on the whole. Park and Guerin[0-13] did a cross cultural study among four cultures (Japan, Korea, United States and England), and concluded that there were similarities between the preferences of US and England. There were also similarities between the preferences and color meanings of Japan and Korea. However, there were preference differences between Eastern and Western cultures.

Grieve[0-20] argues that "although, reactions to color are considered highly individualized,

universal color preferences are thought to exist; for example, blue is the color most frequently chosen by adults" (Grieve 1991)[0-20]. However, as seen earlier, many exceptions exist. For instance, Garth[0-21] studied color preference using Indians, Caucasian, and the mixed-race of the two ethnic groups. Silver[0-22] reports that African Americans like colors in red-purple-black range, whereas white subjects prefer blues and greens. Similarly, Wiegersma and Elst[0-23] report that blue is the color chosen most often, except by respondents from Senegal and Transkei, who prefer red and black. Madden et al.[0-7] did a cross cultural study with undergraduate students from countries in East Asia, Europe, North America, and South America. They concluded that "overall, blue was the most liked color. Subjects from Canada rated black as their most liked color, and blue was a close second.[0-7] Green and white were most liked colors (after blue) across countries and shared similar meanings".[0-7]

However, although from these studies, it can be observed that culture plays an important role in color preference, but they do not conclude if there are other factors such as social environment influencing color preference.

Moreover, many studies have shown that when considering color choice, the difference between genders is very significant. Women might be more color conscious and their color choices are more flexible and diverse than men. Women are more likely than men to have a favorite color and to prefer softer colors than men[0-24]. Hurlbert and Ling[0-25] found female observers preferred redder colors more than the male. Garth and Porter[0-26] examined color preference of 1032 young children and concluded that red was favored most by the boys and blue by the girls with red running a close second. Walton et al.[0-27] reported that the university student male subjects preferred orange to yellow but for the female subjects the preference is reserved.

In addition, N.C. Shen[0-28] conducted a color preference experiment among four groups of Chinese students. He concluded that the boys had a strong preference for orange, blue, and violet but a weak preference for gray, black, and yellow; while the girls strongly preferred white, blue, and green, and least preferred black, gray, and red. Philip Cohen[0-29]

did an online survey with 2000 participants between the ages of 20 to 79, and concluded that blue was preferred by more men; whereas red, pink, and purple were preferred by more women subjects.

As it can be observed, these studies (along with other studies regarding color preference across genders) only focus on colors used by each gender, and other matters such as number of color varieties used by each gender have not been discussed.

Furthermore, color preferences appear to change from childhood to adulthood. Therefore, there are many studies concerning color preference and age as well, which few of these studies will be discussed here.

Infants of both sexes prefer reddish colors[0-30, 0-31], while blue is most commonly favored among adults, especially men[0-25]. Akcay et al. [0-32] concluded that perception of color is different between age groups. For example, red represents love and blood for teens, but blood and passion for the 55 and older age groups. Walsh et al. (1990) [0-33] found that 5-year-old-children generally prefer red candy over green, orange and yellow candy. Terwogt and Hoeslma[0-34] reported that children disliked white and black. Similarly, Pitchford and Mullen (2005) revealed that children preferred gray and brown less than other basic colors [0-35]. Adams and Osgood[0-36] studied color preference of high school students in 20 countries. Cimbalo, Beck, and Sendziak (1984) tested "the association of color and emotion with primary (second and third grade) students and college students.[0-37]. For both groups, the ratings of colors significantly varied: yellow, orange, and blue were designated as happy colors; and red, black and brown were designated as sad colors".[0-37]

These (and other) studies are only focused on color preferences across ages and they have not concluded if other factors such as social environment influence color preference.

In conclusion, although there are many studies on color preference (across cultures, ages, or genders); however, those factors are the main focus of these studies, and there has been no focus on other elements or aspects (such as social environment).

0-2. Purpose of Research

As it was observed in "0-1", there are many studies concerning color preferences, however these studies have not been taken further. Most people have relatively strong and idiosyncratic color preferences, but little is known why they have the preferences they do (Eysenck, 1941 [0-38]; Granger, 1955 [0-39]; Guilford & Smith, 1959 [0-40]; McManus, Jones & Cottrell, 1981[0-41]; Hurlbert & Ling, 2007 [0-25]).

Therefore, in this research, I will take these studies further and through comparing different social and architectural contexts and experiments, I clearly identify and investigate some of the factors influencing interior color preference. In this study, social environment is taken as the primary focus. Social environment is defined by means of regional, residential, and educational. Therefore, education or social education has been defined as part of social environment.

0-3. Methodology

Since in my previous research[0-16] done in 2009, it was concluded that among all the respondents from different countries, only Japanese people were focused on white, therefore, in this research, I will still be focused on cross cultural studies.

As for the method, it needs to be mentioned that there are different types of methodologies in order to do color preference studies; for example, having subjects choose from different selections in forms of color chips, 3D/2D simulations, models or etc. Another method is marketing, which is to see what is being sold the most. Another method is having subjects create something new which is the method used in this study. In addition, depending on the purpose of the study, these methods can be conducted either among professionals or among the common public.

In this study, drawings (provided with 24 color pencils), and a questionnaire (based on subjects' background) will be used. Since, my research is about color preference in interior, therefore, the main drawing will be of a bedroom. Bedroom drawing will be used because

it is considered as a private room and it is a place (room) where one can make the desired changes. Moreover, in order to reach the purpose of this research, the bedroom drawing will be as unisex and as detailed as possible with the drawing including bed, furniture, and even some details like photo frames, plants and others making it look real. Furthermore, aside from the interior (bedroom) drawing, an exterior drawing will be used as well, and since this is going to be a cross cultural study, I will try to use the most international exterior drawing.

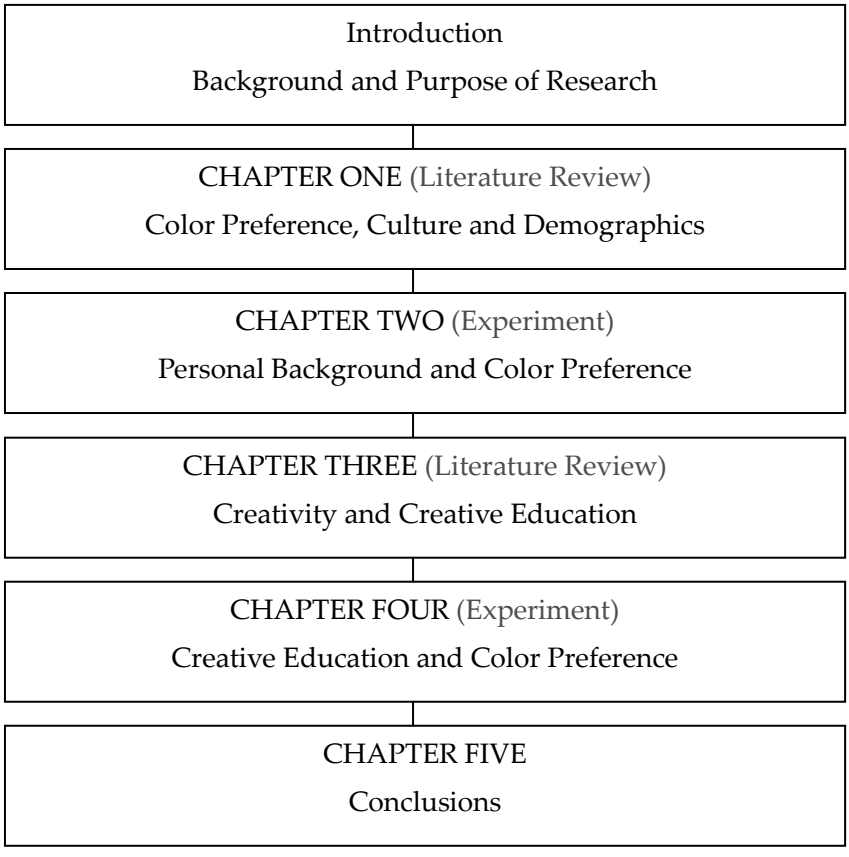
This method is used because as observed earlier, all of the previous researches and studies are only focused on the colors chosen by the subjects and none of those studies evaluate number of color varieties used by different cultures, ages, or genders. Using this method, not only I can observe the differences among colors used by the subjects, but also the differences among (number of) color varieties can be concluded as well. Moreover, in order to obtain a more clear result, by using this method, it can be observed if the respondents try to be creative and use wall-paper-liked-patterns in their (bedroom) drawing or not.

However, it needs to be mentioned that the method used in this study (which is when subjects create something new through different methods – drawings in this study) can have its pros and cons; and although new ideas can be created, however in order to reach the purpose of this study, the main target of this study is the common public who are not professional designers. In addition, they are being judged by their background through questionnaires.

0-4. Thesis Framework

In order to reach the purpose of this research, in chapter one, the role of color in architecture (throughout history) and meanings of colors in different cultures will be discussed. Since this is going to be a cross cultural study; therefore, these factors are discussed in case differences among cultures are observed during this study. Additionally,

chapter one will be focused on the previous studies and works done by different researchers on the topic of color preference. Their work, results, and limitations will be discussed. Based on those studies and limitations, in chapter two, an experiment will be conducted by using drawings of a bedroom, and exterior of a few houses. Based on the results obtained from chapter two, chapter three will be focused on previous studies done on the topic of creativity and creative education. In chapter four experiments will be conducted on the topic of "creative education and color preference" by using drawings, questionnaire and bedroom pictures. In chapter five, final conclusions, achievements, and further studies will be discussed.



0-5. Limitations of this Research

First chapter of this study focuses on the role of color in architecture, meanings of colors across cultures and color preferences studies. Although, from these studies, it can be observed that culture, color-history, color-rituals, and customs may play an important role in color preference; however, in this research, I will only focus on social environment which is a factor that has not been studied before. Having mentioned that, this study will be done among people from different cultures; therefore, if there are any specific differences among the results across cultures, then, it can be argued that culture has been a factor on interior color preference.

However, although in chapter one, the role of color in architecture and how architects have used colors in their buildings will be discussed; but the subjects of this study (subjects of the experiments done in chapter two and chapter four) are common public (university students), and not professional designers or architects. Furthermore, the subjects are judged by their background only through a questionnaire, and therefore, I have relied on those answers being true and real.

In addition, in chapter two, there is a brief introduction on how other researchers and designers have tried to use colors in their interior (living room, dining room, bathroom, hallway, and kitchen); however, this study only focuses on bedroom.

Moreover, by doing more experiments and literature reviews in chapter two, three, and four, other limitations of this study might be discovered which will be discussed further.

Therefore, the conclusions obtained from this study are only within these limitations, and it would be interesting to do this study considering other factors, which will be discussed further in Chapter Five.

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CHAPTER ONE

Color Preference, Culture and Demographics

1-1. Introduction

John Hutchings states that "color and appearance are essential to the well being of most living organisms"[1-1]. In addition, he argues that "as human beings, our imagination and creativity as well as the availability of color gives us the power to manipulate our appearance and environment. We have exploited our color vision so that color now forms a highly significant part of modern life. Colors we use in everyday life tell stories about ourselves." [1-2]

He further argues that "color has been used since before the times of the cave painters. In the modern world, it is used for aesthetic purposes, for communication and safety such as color coding, for identification such as the delineation of ritual areas, and for symbolism. A color applied as part of a painting to a wall, an artifact or to a human body is a signal, a communicator of information."[1-2]

Certain colors are preferred in different cultures and the meanings associated with color might vary from country to country[1-3,1-4,1-5]. For example, according to Bond (2010)[1-6], red is the color of strength, health, and vitality and is usually chosen by people with open and uncomplicated natures, and a zest for life. Black has been associated with nasty and negatively characteristic figures, and negative emotions[1-7], and sadness[1-8]. In Nigeria, black is used to represent evil and works of darkness[1-9].

Moreover, there are many studies that investigate color preferences across cultures and demographics. Wenzel, Langer, Kassar and Bencze[1-6] define color preference as the tendency to prefer certain colors over others. Some colors are perceived as pleasant and attractive, while others appear less pleasant or neutral, sometimes even repellent.

With color so vital a part of all aspects of modern life, and with unparallel technical resources at hand, architecture may have to come to terms with color[1-10]. Le Corbusier said that color can put into order, prioritize, or unify the final space[1-11]. However, researches on color in architectural education show that there is a severe lack of knowledge about color research among students of architecture[1-12,1-13,1-14].

In this chapter, the role of color in architecture, meanings of colors in different cultures

and among different people, and various color preference studies (including my previous research[1-64]) will be discussed.

1-2. The Role of Color in Architecture

Color has played a prominent part in the architecture of many lands and periods. Randall argues that "the alliance between color and architecture is almost as old as recorded history".[1-15] Historical examples run a wide gamut to include Egypt, Assyria, Minoan Crete, Greece, Maya, Spain, Mexico, Persia, India, China and medieval Italy[1-10]. The use of color characterized architecture in these countries and periods[1-15]. Most of these countries lie either in the Mediterranean area or in the prolongation of these latitudes. The logical explanation is climatic; strong sunlight tends to absorb color so that in hot countries, vivid surfaces appear quite subdued[1-10].

Randall Vosbeck further argues that "color plays an important part in the rediscovery of the traditional. There is a color climate as well as a weather climate, although the two are certainly interrelated. In the Mediterranean and the Caribbean, soft pastels dominate, whereas the colors in Latin America, Asia, and India are deeper. Their trim has more contrast. There is a varied color climate in the United States, but generally speaking, colors get lighter the further south and west we go".[1-15]

In regions of dull days and overcast skies, brightly colored areas may seem over-powerful in relation to their natural setting. Thus, in Western Europe, in the centuries after the medieval period, color on the exterior of buildings has tended to be rejected.[1-10] Randall states that "medieval architects set off the muted tones of their magnificent cathedrals by using the jeweled colors of stained glass, and later artists emphasized the heavy ornamentation of the baroque and rococo periods with delicate pastels".[1-15] In temperate regions, therefore, color reaches its fullest development in interior decoration. Thus, we can contrast the multi-toned marble facades of the Italian churches with the interior painting and stained glass of the French cathedrals. Or we might cite recent investigations of our Colonial architecture, which reveal that interiors, far from being

consistently white, as has long been thought, were in fact painted in an extensive palette of rich colors. [1-10]

The use of color as architectural decoration is subject to certain general limitations. It is either of a permanent nature, as in glazed tiles or the actual hues of natural materials, or it is impermanent, as in painted surfaces. The two techniques produce markedly dissimilar effects. Moreover, the colors used in architecture were never, until relatively modern times, freely selected by the artisan, but were dictated by the material at hand or by cultural restrictions[1-10]. For example the colors of enameled surfaces depend upon the available glazing ores.

Additionally, colors are frequently dictated by ritual custom and habits. Patterns transferred to architecture from the minor arts usually retain the color schemes developed in the original mediums[1-10]. Modern study has revealed that the temples of Egypt were painted inside and out, but the palette, although extensive, was employed without any regard to color harmony[1-10]. Judging from the artifacts Tutankhamun left behind, ancient Egypt appears to have had a considerable awareness of colors in nature as well as of color for its sake: the use of color to achieve aesthetic effects[1-62].

Tradition laid its lifeless hand upon art in Egypt. R. Vosbeck states that "Egyptians used color in their temples to please and amuse their Gods".[1-15] Hieroglyphs, human figures, material objects, and all other elements of relief carving and architecture were consistently painted by formula with the same unchanging tones. In fact, color came to architecture second hand, for wall paintings and reliefs illustrating architectural constructions preceded the decoration of the monuments themselves, and set the palette later used on the buildings[1-10].

In Greece, the color decoration of architecture goes hand in hand with, and probably stems from, the coloring of sculpture. This particularly true of painted, architectural terra cottas which were created in the shop of potter[1-10]. A restricted palette of two principal color combinations was used to augment the white of plastered walls: on one hand, red and yellow, and on the other hand, red and blue. Two attitudes dominated the color decoration. Tradition had firm hold on the more frankly decorative details, such as acroteria and

antefixa, whose floral motifs were painted in the style and colors of the minor arts. The second attitude dealt with structural elements: stone translations of earlier wooden members – triglyphs, mutules, and moldings – were singled out for decoration in red and blue[1-10]. Areas formerly voids, such as metopes and tympana were filled with colored sculpture. It should be noted that the use of color on vertical supporting members was consistently avoided[1-10]. Jose Luis Caivano[1-12] in his paper states that Jacques-Ignace Hittorff (1792-1867) argues that: the Greek architecture was not white – as it was believed for centuries based on the color of the ruins – but polychromatic. The Greeks used to paint their temples as well as their family dwellings with vivid colors. Hittorff published these findings in his book of 1851 on the polychromy of Greek architecture, where he made a case of the temple of Empedocles in Selinus, Sicily[1-12].

Much more illuminating are the structures clad with faience mosaic, which were erected in Persia during the Islamic period (Figure 1-1). From remote times, color had been used in this region as an important feature of architecture. In antiquity, the familiar polychromatic, glazed brick friezes of Babylon mark an early culmination[1-10].

Figure 1-1. Masjed-e-Shah (Imam Mosque), Isfahan, Iran

Photo taken by: Mahshid Baniani

Assyrian glazing technique lingered on in the decoration of Achaemenid palaces at Susa and Persepolis, but after 300 B.C., it vanished completely from architecture. The important factor, however, was that the ability to produce fine uniform glazes continued to be a significant part of the potter's craft all through the subsequent Parthian and Sassanian periods[1-10]. In the seventh century, the Islamic conquerors of Persia and adjacent lands gave a powerful impetus to the dormant capabilities of the quiescent East. Architecture shared in a great cultural movement which, during the tenth, eleventh and twelfth centuries, evoked the erection of hundreds of fabulous mosques and shrines (Figure 1-1). Fondness for expansive decoration in floral or abstract geometrical patterns was strong in the hearts of these people, and the natural result was that architectural decoration was developed to an amazing degree[1-10].

In these and later works, the traditional building material, brick, sun-dried or fired, was used both as structural core and surface enrichment[1-10]. In the later, brick bond patterns display a variety and ingenuity unequaled by the craftsmen (Figure 1-2). At first, this bonding was architectonic, tying the outer layer into the core of the wall; but as the technique began to be exploited to the highest degree, and the structural quality of the material was lost. The revetment was no longer tied to the core, whole bricks were replaced by terra cotta insets of all sizes and shapes; and finally walls were coated with plaster into which was incised an imitation of the brick bonding patters[1-10].

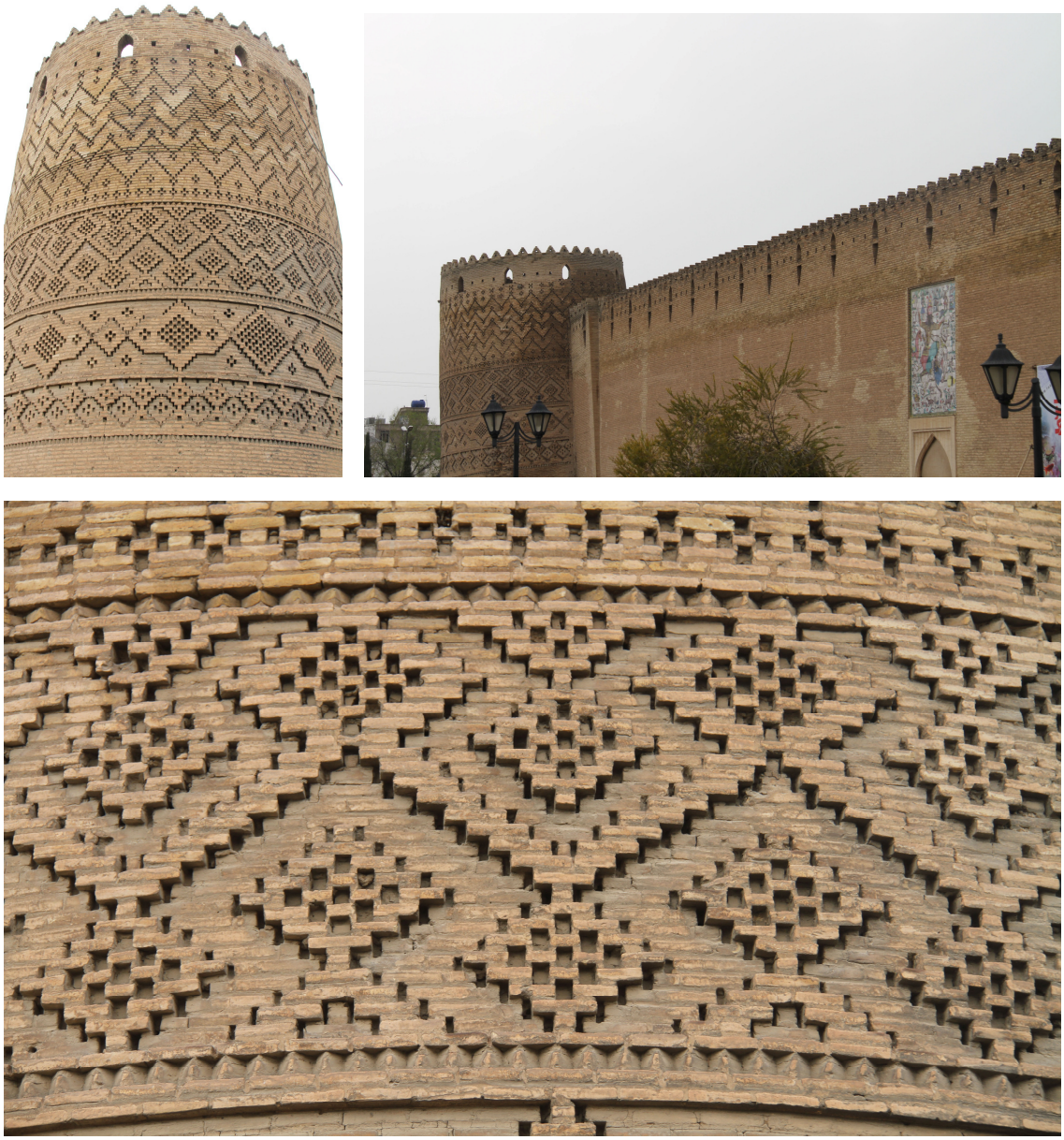


Figure 1-2. Arg (Citadel) of Karim Khan, Shiraz, Iran

Photos taken by: Mahshid Baniani

With the decline of pure break decoration, a new technique arose to take its place. Potters, working in nearly every village, created especially notable and distinctive styles in such urban centers as Kashan, Ray, and Sultanabad (all of which are cities in Iran), establishing ceramics almost on the plane of major art[1-10]. Vessels in a great variety of shapes were finished with single color glazes, to which was added decorative painting either under or over the glaze; and sometimes even gilding was applied as a final enrichment. The glazing colors, dark blue and light blue, were both obtained from cobalt oxide, and favored because the mineral was easily extracted from the local ore. Some of the standard products of the pottery shops were intended for architectural embellishment[1-10]. These were painted and glazed, star shaped and octagonal tiles used for interior dadoes, and inscription bands made up of Arabic texts molded in low relief and painted and glazed. Both could be used either in new buildings or to rejuvenate the appearance of older structures; but in neither case did their use involve an architectonic relationship with neither the structure nor considered design on the part of the architect or builder[1-10].

During the eleventh century, building craftsmen in different parts of the country began to sense the possibility of employing these products of the potter's craft as a conscious architectural decoration. The first steps were tentative; standard tiles about a foot square, covered with dark blue glaze, were cut up into irregular pieces which were then inserted sparingly and haphazardly into the completed wall surface[1-10]. The next step logically called for the production of glazed pieces of specific geometrical shapes – circles, lozenges, and diamonds – which could be assembled into bands of color to relieve the monotone walls. Real progress came with the perception of the decorative value to be derived from the use of such treatment over large wall surfaces. Geometric patterns, already developed to a marked degree in pottery, manuscripts illumination, plaster, and terra cotta served as source material[1-10]. Adapted to architecture, these patterns were treated as "strap-work" designs of continuously interlacing strands. Some of the strands were of plain unglazed terra cotta. Others were formed of pieces of dark blue or light blue glazed tile cut to precise shape and fitted together. Experimentation with this technique continued through the twelfth and thirteen centuries [1-10].

About the year 1300, a logical climax was reached with the use of complete faience mosaic in which all elements of the pattern were pieces of glazed tile, with the result that very extensive wall surfaces were covered with an unbroken revetment of enameled pattern[1-10]. To the two blues, which had formerly been the only colors used in the "strap-work" patterns, were now added white, black, and finally aubergine, green, and yellow. The patterned faience spread over the entire exterior of the structures and invaded the interiors. It is clear that the technique of faience mosaic, so steadily developed from obscure beginnings, was thoroughly architectonic in character[1-10]. In the imposing Timurid monuments of the fifteenth century, at Mashad, Heart, Bokhara, and Samarqand, and in the Safavid structures erected throughout Persia in the seventeenth century, the technique became a standard system. While the core of the structure was being raised, craftsmen working at the site determined the decorative scheme according to a panel division of wall surfaces. Full scale pattern drawings were made and the glazed shapes cut out and fitted together over this pattern. Each panel was then backed with plaster, raised to its final position, and bonded against the structural wall[1-10]. Since the essential stylistic spirit of these Islamic structures was the creation of very large plane wall surfaces with a minimum of moldings, projections, and set-backs, the multi-colored ornament which emphasized continuity in structure and ornament enhanced the fundamental qualities of the architecture. Although the individual patterns were often of great complexity, the scale of the pattern was so small that it absorbed the attention of the spectator only if he looked deliberately at details instead of the principal masses of the building. When the mosques were seen from any distance, the vibrant and expressive color served to integrate the parts to the whole and to emphasize such features as horizontality, verticality or position of openings, according to the considered plan of the designer. The palette was extensive and not controlled by tradition. Different regions showed a local preference for particular colors: blue predominated in Persia, while green was more popular in Asia Minor[1-10]. The choice of colors in any pattern was dictated only by a desire to achieve color balance and color harmony, and in this respect showed rationality and an approach to modern sensitiveness quite remote from Egyptian and Classical usage. If the past has any lessons

applicable to the problems of contemporary architectural decoration, they can surely be found in the technique of Persian faience, for in that style color and ornament were fused into a fundamental unity of the most architectonic nature[1-10]. Colored patterns played their role on every part of the structure in striking contrast to the spotty appliqué so common in present architectural enrichment (Figure 1-3).

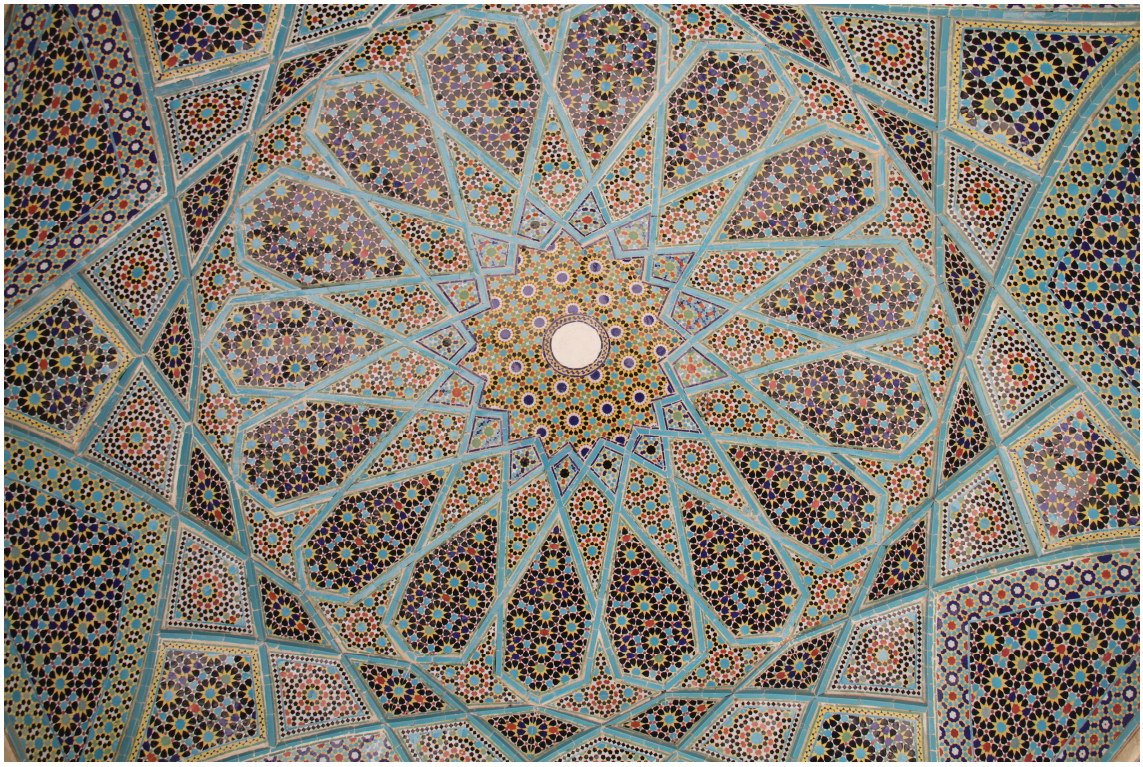


Figure 1-3. Tomb of Hafez (Iranian Poet), Enameled tiles mosaic on the ceiling
Photo taken by: Mahshid Baniani

The products of Persian genius may suggest a combination of inspiration and logic such as is needed in formulating a contemporary color style, but they will not solve the question of a modern ornament executed in any of the new modern materials – for example such materials as those used to sheath a structural steel skeleton[1-10]. Theoretically, a sheathing of monochromatic stone slabs is only one of a large number of possible materials, materials in which color might play an important part. These materials are not of necessity restricted to small units put in place according to the traditional methods of the mason, for more imperious requirements are that they shall be light in weight, applicable in rather large pieces, impervious to all the elements, and possibly of insulating value. Glazed tile and enameled metal sheets satisfy such demands, and have the possibilities of ornamental color treatment inherent in the very material[1-10]. Colored concrete slabs are another type of material whose potentialities have not been fully exploited. It may be impossible to establish a program by which modern architecture is necessarily fused with colored decoration, for any program could deny the assumption that ornament must grow from the major characteristics of the contemporary architectural style[1-10]. We may well believe, however, that the increasing predominance of color in all phases of modern life and the availability of colorful structural material will produce in good time a bright, spirited and thoroughly architectonic ornament[1-10].

R. Vosbeck[1-15] states that "when we reached Victorian times, color ran riot. It was an era of excess in design and decoration. Things calmed down a bit, architecturally speaking, around the turn of the century. Lines were cleaner and painted surfaces in homes and offices were neutral tones of ivory, cream or buff[1-15]. In the 1930s, however, technology and advertising combined to make the lives much more colorful. Modernists from warmer regions, such as Le Corbusier (1887- 1965) and his colleagues tended to be strong proponents of color, and even today European architects seem to lead the way in innovative uses of color".[1-15]

Additionally, J.L. Caivano[1-12] states that "Le Corbusier's first writings on color appear in the articles about purism and cubism written in collaboration with the painter Amedee Ozenfant. An article of 1918 reads: "The idea of form precedes that of color. The form

preeminent, color is but one of its accessories. Color depends entirely of the material shape: the concept of sphere, for instance, precedes the concept of color; it is conceived as a colorless sphere, a colorless plane, color is not conceived independently of some support. Color is coordinated with form, but the reciprocal is not true. We believe, thus, that a theme should be selected for its forms and not for its colors". [1-12] The curious fact is that a few years later, in his writings on architectural polychromy of 1931, Le Corbusier seems to have changed his mind completely, to the extent of quoting and agreeing with Fernand Leger, who said: "Man needs color to live; it is an element as necessary as water and fire". In addition, Le Corbusier describes examples of his own use of color in order to drastically change the spatial perception of architecture as in the neighborhood designed and built in Pessac".[1-16]

Color in modern architecture is provided in a consistent manner with the composition of form and space, so we can say that it "conforms". Thus, Le Corbusier displays color in buildings to strengthen and emphasize the geometry of the volumes[1-17]. However, Le Corbusier also used color to introduce tension into the "spatial box" and transform inner spaces. Rietveld goes further in the transformation and provides color to stress the break of the volume and the visual independence of each of the elements that compose his famous Schroeder House (Utrecht, 1924) [1-11].

Caivano[1-12] states that "by far the boldest and most outstanding colorist among the architects of the modern movement was Bruno Taut (1880-1938)"[1-12]. The German architect is a strong advocate of bold color compositions, especially in urban areas [1-11]. Caivano further states that "even when he is not deemed as eminent as Le Corbusier, Gropius, Mies van der Rohe, or Wright because his influence on the next generations was not as strong as theirs, Taut was the one who advocated for the use of color the most"[1-12]. Taut believed that color can shed light on the shadows, what must be understood not only in a metaphorical sense but also in a plastic one, color can "illuminate" a new society and a new architecture. Color has moral and physical effects and is justified by observing the behavior of children, who prefer to play in those streets with cheerful colors [1-11]. The audacity of Taut's color schemes led Le Corbusier to say in 1927: "My God, Taut is color-blind!" Commenting about

the impact caused by his Falkenberg housing estate of 1915 in Berlin-Grunau, Taut himself declared that his color scheme "provoked the Berliners who, coming from the gray tenement quarters, repeatedly declared that the architect deserved to be locked up" [1-12].

The Italian architect, Piero Bottoni (1903-1972), claimed to use the gradation of colors instead of flat colors in his manifesto "*Cromatismi Architettonici*" (1927), while modern conceptions were still being discussed. Bottoni argues that the "volumetric function of color has never been studied enough and, moreover, the "mass-volume" power attributed by a color to a geometric solid plays an important role in the aesthetic balance and the perception of the "resistant" values of any structure." [1-11,1-18]

Alberto Sartoris (1901-1988) cannot be labeled to be suspicious of rejecting color, as many of his buildings are colored. Of course, he distance to any decorative conception and claims for a color consistent with other properties of shapes, not as a post added: "I have abolished the word decoration and replaced by the word incorporation. The painters painted the wall at the end, when everything was finished, while the wall should be an integral part of architecture and should be thought first." [1-11]

R. Vosbeck[1-15] argues that "by the mid 1960s, these ideas of the modernists had trickled down from academia and innovative architects to suburban housing projects, which became, both inside and out, a monochromic off-white. Occasionally, a little color was shown in a kitchen or bathroom, but that was as far as it went. Function and form were everything".[1-15]

Additionally, Caivano[1-12] states that "much of the discussion among modern architects with regard to the conception and use of color can be considered in connection with the different modes of dealing with color, instead of being established between the detractors and the defenders of color. A milder view would show that even those who were very austere or purist in this sense (like Gropius or Mies, for instance) did not ignore the importance of color[1-12]. The color white in the most purist modern architecture was intended to make the building contrast with the environment, or to make the details or furniture in the interiors stand out, or to let the chromatic weight of the landscape penetrate with more strength into the interiors through the large surfaces of glass or the

horizontal windows"[1-12] (Figure 1-4).

Figure 1-4, Mies van der Rohe's German pavilion, Barcelona, Spain

Photos taken by: Mahshid Baniani

Vosbeck[1-15] notes that "the public never really accepted this black, white, and gray palette. The first thing many of the new residents of these pristine buildings did was to paint and paper their walls. Even in the more rarified atmosphere of the fine arts, this black and white approach became too much of a good thing. Even one of the masters – Frank Lloyd Wright, who had limited his painted colors to cream and a single square of "Cherokee Red", and who for years preached vigorously against the "cosmetic" effect in architecture, turned to the boisterous use of color in his later designs"[1-15] (Figure 1-5).

Figure 1-5. Hollyhock House, Frank Lloyd Wright, Los Angeles, California

Photos taken by: Mahshid Baniani

After Second World War, the principles practiced and defended by the Modern Movement spread throughout the Western, both in academic and professional circles. [1-113] Serra et al. argue that "some critical opinions started to claim an alternative architecture, although they still did not talk about a real postmodern architecture". [1-113]

However, at the 9th CIAM Conference (1953), opinions contrary to the modern doctrine began to be obvious, especially those related to town planning, claiming for architecture closer to the city reality. [1-113] It was in the 60s when these ideas were translated into a large number of utopian architectural proposals, which opposed complex technical and formal solutions to their predecessors' simple rational forms. [1-113] Nevertheless, Serra et al. argue that "they shared with Modern Movement the same optimistic trust in architecture as a driving force to change society". [1-113]

Serra et al. [1-113] further argue that "some of the new utopian color proposals were linked with ecological activism and introduced green gardening to color buildings, as well as a more natural process in color conception. These utopian cities are often represented by collages and photo-montages that introduce typical pop colors (pure and contrasting tones), and sometimes black and white lines with occasional color emphasis." [1-113] The Center (Georges) Pompidou, National Museum of Modern Art, designed by Richard Rogers and Renzo Piano is a clear example. [1-113]

During the 80s, high tech architecture is greatly influenced by the technological utopian proposals of the 60s, and it inherits its paucity of color in some ways. Serra et al. state that "these mega-structures imagined by the *technological new utopians*, have still survived today in the work of architects such as MVRDV or Rem Koolhaas, who work with stacks and stratification that resemble those composition systems". [1-113] In addition, the 80s are years of large color plans in Europe. Lenclos (2009) argues that "France was fully involved in this colorful fervor, and the *villes nouvelles* in the surroundings of Paris, Rouen, Lille, Lyon, and Marseille, used the color to provide interest and personality to the housing states that were flouring around them". [1-114]

Furthermore, Serra et al. (2014) argue that "the main contributions of color in architecture during the 80s, was to bring architecture closer to people. Color makes it

possible to put the high-architecture nearer to the public and recover the connection between buildings and inhabitants. Therefore, color is a key role in the 80s for communication." [1-113]

During the 90s, new coloring technologies, both in building and in computer-aided designing materials are advanced and developed. [1-113] Artists and architects try to exhaust the color possibilities of materials and their shaping, reaching complex results. [1-113] Serra et al. state that "it begins in this decade the versatile understanding of color, which is a key aspect of the 21st century architectural color". [1-113]

R. Vosbeck argues that "in the last few years, more and more architects have begun to use color as a reclaimed tool of their art. The cost of building or remodeling continues to rise; each time costs go up, it seems that a few more of our design options go down for the count[1-15]. This means that architects have to rethink and simplify forms, spaces and details, and in many cases they have to use less expensive materials[1-15]. Innovative and imaginative adjustments must be made in order to come up with a stylish and effective design within today's hard-pressed construction budget. This is why color is becoming increasingly important".[1-15]

He further states that "color can be used to reinforce the different functions of architecture. It can recognize space; it can underscore form. It can even go back to its traditional role as an extension or clarification of design. A painted wall can suggest a cornice or a column, or it can be used to blend the building in with the surrounding terrain – to make it an inconspicuous good neighbor".[1-15]

In addition, "architects, particularly the younger ones, are seriously investigating a wide range of colors, from the bright pigments of high-tech to the eggshell pastels of beaux arts. They are even going back to the apple green and pale rose of the 1950s. All of this is part of their search for an expanded visual vocabulary, which must be developed within the bounds of today's cost constraints. Perhaps the cliché that change occurs only during a crisis is applicable to architectural, as well as biological, evolution".[1-15]

Furthermore, "color is also a vital part of another trend – preservation and conservation. Technology has been a tremendous asset. It has given us better building materials, such as

structural steel; better decorating materials, such as paint which comes in a mind-boggling array of colors, is long-lasting, and is easy to apply; and better mechanisms, such as the high-speed elevator".[1-15]

Jose Luis Caivano in his paper states that "in Vitruvius' *Ten Books of Architecture*[1-19], published in 1452, Leon Battista Alberti follows Vitruvius' conception of color, merely as coloring substances or paints with which the wall may be adorned (Book 6, Chapter 9): "*of painted surfaces some are done while the work is fresh and others when it is dry. All natural colors which proceed from the earth, from mines or the like are proper for paintings in fresco; but all artificial colors, and especially those which altered by means of fire, require a very dry surface.*" In Chapter 10 of book 7, Alberti makes an observation that relates color to aesthetic values or preferences. When dealing with the decoration of temples, he says: "*I am very ready to believe that purity and simplicity of color, as of life, must be most pleasing to the Divine Being*". [1-12]

R. Vosbeck states that "color is such a vital element that architects and other designers who are involved in building conservation have had to become skilled detectives in the process of color selection. What we are still learning is how to live with color in our designs today. However, we live in a world both of form and color, and to ignore one in favor of the other is to work against nature instead of with it".[1-15]

Perhaps George Bernard Shaw saw most clearly the need to combine both. He wrote "I believe in Michael Angelo, Velasquez, and Rembrandt; in the might of design, the mystery of color, the redemption of all things by Beauty everlasting, and the message of Art that has made these hands blessed" [1-15,1-20].

Having defined the role of color in architecture, next, I will focus on meanings of colors across cultures.

1-3. Meanings of Colors across Cultures

1-3-1. Description of Color Meaning

Osgood, Suci, and Tannenbaum[1-21] defined meaning as a representational mediation process that includes the interpretation and expression of ideas. They suggested that this process is linked to linguistic and situational variables of the individual, that is, an individual's interpretation and expression of an idea has its roots in a much larger context, one that is beyond the immediacy of an experience.

Certain colors are preferred in different cultures and the meanings associated with color might vary from country to country[1-3,1-4,1-5]. According to Akcay et al., in China red is an appealing and lucky color; in India it is the color of purity. Around the world, blue is the most popular color and is considered a safe color[1-5].

White is the color preferred by intellectuals, such as medical professionals. In Japan, it is associated with death while Eastern Cultures associate white with coldness and sterility.

Black can be associated with death and mourning but it is also considered sophisticated and elegant. Black is the number one choice for business attire, and the number two choice for casual wear. Most government officials around the world use black transportations vehicles[1-22].

D. Sharpe (1982) states that "meaning occurs when a significance is formed in the mind. This may differ for each individual; it is subjective and based on various experiences, education, and culture".[1-23] In addition, Butterfield (1990) defined color meaning in the interior as "an interpretation of the designed environment based on an individual's reactions to the colors or color palette; a significance, impression, or meaning for a color must be found in the mind".[1-24]

In developing an understanding of the meaning of the designed environment, Rapoport[1-25] stated that "socio-cultural forces are important in meaning formation". His approach to meaning incorporates psychological, semantic, and linguistic approaches; but relies most heavily on anthropological stance. [1-25] He suggested "people form their

interpretation or meaning of an environment from the cultural norms for the appropriate use of design elements. Thus different meanings are inferred by different socio cultural groups, and similar meanings occur across groups in relation to shared experience".[1-25]

Here, let's add that researchers of cross cultural studies of color fall into two categories. Park et al. argue that "one group of researchers support *color universals*. They assert that individuals in all cultures have the same preferences for color[1-26]. Whereas another steam of researchers assert that culture is one of the main underlying reasons that individuals of various cultures prefer different colors".[1-26,1-27,1-28.1-29,1-30]

Park et al. argue that "in one of the earliest studies on color meaning across cultures, Garth[1-29] supported color universals. [1-26] Garth conducted a study to uncover different reactions to six saturated colors among different racial groups". [1-26] Garth concluded that "color preference in a race is positively influenced by racial tradition and custom" (p.116). His sample group included school age children. His findings revealed that "color preferences of these groups differed gradually with education". Garth concluded that "natural influences (tradition, formal education, and aesthetic ideals) tended to make races differ in color preference while individuals of the same race had similar preferences". [1-29]

Additionally, Park and Guerin[1-26] concluded that "cultures do differ in their preference and meaning of colors". [1-26]

Randall Lane states that "Wagner, the creator of the Wagner Color Research Institute, contends that colors are associated with certain images"[1-31]. "For example, blue is associated with wealth, trust, and security; gray is associated with strength, exclusivity, and success; and orange denotes cheapness. These associations may explain why banks are more likely to color their logos and collateral using blue or gray rather than orange".[1-32] "Wagner put his theory into practice with Wienerschnitzel, a hot dog restaurant with 350 locations in the United States. Wagner advised Wienerschnitzel to add a little orange to the color of its buildings to convey the message that the chain sold inexpensive hot dogs. After the change in color, Weinerschnitzel reported a 7% increase in sales".[1-31]

Moreover, Madden et al. [1-3] did a cross cultural study regarding color meanings in East Asia, Europe, North America, and South America and concluded that "blue, green and

white are strongly associated with "peaceful", "gentle", and "calming" in all the countries. Additionally, in some countries, subjects also associated "beautiful" (Brazil, Hong Kong, PRC, United States), and "pleasant" (Austria, Colombia, United States, PRC and Taiwan) with blue, green, and white".[1-3] Furthermore, "black and brown tend to have strongly held associations of "sad" and "stale" across cultures. Additional meaning associations of "formal" (Brazil, Colombia, PRC, and Taiwan) and "masculine" (Austria, Hong Kong, the United States) were evident in some countries, indicating again both universal and unique meanings for black and brown across cultures. Red was consistently associated with "active", "hot", and "vibrant" across all countries. Red conveyed additional meaning ("pleasant") in two of the Asian countries (PRC and Taiwan)". [1-3]

Jacobs and colleagues[1-33] asked the students subjects from four cultures (Japan, People's Republic of China [PRC], South Korea, and United States). All four cultures associate blue with high quality and red with love. Purple is associated with expensive for subjects from Japan, PRC, and South Korea. In contrast, respondents from the United States associate purple with inexpensive; Black is consistently associated with expensive and powerful across cultures.

Based on these findings, in "1-3-2", different meanings of colors across cultures with different traditions and folklores will be explored.

1-3-2. Color Meanings across Cultures

John Hutchings (2004) states that "human beings use color to manipulate their personal appearance and environment. A large part of this usage falls within the area of oral tradition and ritual that have been handed down within families, tribes or geographical areas. The resulting images are part of our culture; they are activities that give us feelings of belonging and of doing the *right thing*".[1-2]

He further argues that "there are two major motivations for color use in daily life. One broadly results from legislation; the other is tribal or personal. The legislative driving force is provided by regulations and includes such color uses as traffic lights, supermarket staff

uniforms, heraldic devices and choice of automobile colors. These do not form part of oral tradition and hence have been omitted from further discussion".[1-2]

"To step back, images comprising the total appearance of a scene are controlled by two groups of factors: first, the scene material physics and design working together; and second, properties of the observer – that is, his or her sensory characteristics, heritage and immediate environment".[1-2]

J. Hutchings further states that "color and appearance have various functions in oral tradition. For example, they are used to identify the central character, perhaps a bride, and the occasion, such as a seasonal decoration. In traditional stories and activities white and black may be used to portray good and evil, sometimes red symbolizes the color of blood or is used to frighten".[1-2]

In Iran, asked what color white wool or a white color chip has, informants will say: "It has no color. It is just white." On the other hand, some informants named black color chips "dark blue", because obviously everything on the chart was colored, therefore this dark chip had to be colored too; it could not be "just black".[1-34] In everyday use, however, black and white are familiar categories and their terms are used with confidence, although neither has a dye and neither is regarded as a color in the proper sense[1-34].

J. Hutchings state that "there is nothing inevitable about the way a color is used for a specific purpose. For example, there is no feeling across cultures that a particular color is the most suitable for a bride. However, a custom widely accepted across many international boundaries is the use of achromatic colors black, gray and off-white for mourning. These are colors of cheap, readily obtained, easily cleaned materials that are available for wearing for work and for all such occasions of respect. They provide suitable dress for individuals unable to afford to spend money on something that would be worn rarely".[1-2]

"In some traditional activities, for example in Britain, the decoration of the bride before her wedding day, use of specific colors is irrelevant; it is appearance that is important".[1-2]

Hutchings further states that "the divergence of Chinese white and European black for mourning is sometimes said to exhibit how these cultures are totally different. However,

this needs not to be so. Both cultures use achromatic colors optimized in different directions; one to white, the other to black. In fact, in Britain, at a time of death both black and white are traditionally used. Although the color of mourning is black the traditional laying out room is white and the body is normally given a white covering". [1-2] From the middle of the nineteenth century dyes became less costly and, for example, a deep purple came into fashion in Britain as a second degree mourning color.[1-35] In Iran, dark green, dark blue, and black are considered appropriate for old women and mourning, while red, orange and yellow are suitable for girls and young women.[1-34]

J. Hutchings notes that "the use of achromatic for funerals is not worldwide. Bright colors are worn during funeral ceremonies in Bali and Mexico. Highly colored coffins shaped according to the occupation of the dead person are common in Ghana. Another exception is the use of red in West Africa and southern states of the USA. In these places red is associated with protection from evil spirits". [1-2]

"De women all heard dat Ella Speed was dead,

They all went home an' they re-ragged in red."[1-36]

"Hence, around the world, color appropriately echoes these principles of approach to death; these are sadness of death, the celebration and happiness for the dead or for the life of the deceased, and fear of the dead and protection from the spirits of the dead".[1-2]

Moreover, J. Hutchings states that "although national colors are matters of legislation, their translation into everyday use belongs to folklore. Historical driving forces include the use of color in a patriotic sense. In Britain, maypole dance ribbons are very often the red, white and blue colors of the British flag. In Japan, the introduction of red rice as a dish used to celebrate happy occasions coincided with the introduction of the red and white national flag in 1870. This occurred at the start of a period of Japanese industrialism and imperialism. In Finland during World War II, Russian occupied houses were painted a particular shade of blue. For long, after the forces withdrew, this color could not be used for marketing as it was associated with bad memories of the occupation".[1-2]

He further argues that "customs, although trending to be individual to a culture, are transferred by movement of peoples through migration, capture or the spread of religion

and tradition. The "western" white bride's dress was spread around the world by colonialism and trade. The traditional bridal red, black and white (or ecru) in Middle and Eastern Europe, can be found from Sweden in the north to Italy and Greece in the south".[1-2]

In addition, Hutchings states that "bridal reds, by body painting or in the dress, occur in a broad band around the world from China in the east, through India to the near east, and continuing through North Africa in the West. The route taken into India may have been through the northeast via Assam from China or through the northwest via the Aryan Iranian Indo-Europeans. (The use of red by an Indian bride is first mentioned in the Rigveda, the book of Indian custom, written 4000 years ago.) In 5000 B.P. women in Ancient Egypt and Mesopotamia used henna to color their hands and feet. This was believed to counter evil".[1-2] Tektronix[1-37] argues that black on red signifies happiness to Chinese people, and therefore the color combination is commonly used for wedding invitations.

"The couple must look their best on the wedding day. Skin may be lightened, as in India, or darkened, as in Africa, as culturally appropriate to increase desirability. In cultures in which marriages are arranged, this practice must increase immediate attraction between the couple[1-2]. However, in some countries, the bride must not look too good. Anyone or any thing looking perfect or beautiful is said to be trying to copy and hence blaspheme God, therefore man-made beauty must be spoiled with black (or dirt). Chimney sweeps can be hired in Britain to bring good luck to a marriage by touching and spoiling the appearance of the bride's dress on her wedding day".[1-2]

J. Hutchings states that "on the wedding eve in Scotland, the groom may be "blackened", that is, stripped naked, covered with soot and water, and wheeled around town in a wheel-barrow. In Britain as a whole, the bride-to-be may be dressed up by her work mates".[1-2] She is dressed in whatever colors are available; and specific colors are not important[1-38]. "In pre-wedding ceremonies, in parts of the Hindu and Moslem world's colors, especially turmeric and henna are used to drive away evil spirits".[1-2]

Hutchings further states that "in some cultures, contrast between bride and groom is emphasized. In others, couples marry in the same colors. Examples are Hindu (red), Parsee (white), and the Yoruba in Nigeria (right colors to emphasize the fusing of two individuals

into a unity). Color symbolism used in the ceremony itself includes the use of red and yellow components at Hindu weddings. The marking of the bride with a color include the Hindu use of vermilion, the Muslim henna, and the western gold ring".[1-2]

In his paper[1-2], J. Hutchings further states that "the red or yellow worn in India had the specific purpose to "repel demons".[1-2] In Palestine, the change of dress color during the wedding ritual indicates the bride's change of tribe on marriage". [1-2, 1-39].

He adds that "it is appropriate that wedding colors are also lucky colors, that a color associated with an inherently happy occasion should carry with it the hope for a good and fruitful life ahead. An example may be the use of blue in Britain for along a symbol of true love and faithfulness. However, the purity meaning of white was established in Europe before its widespread use by brides".[1-2]

In addition, he argues that "the ancient use of reds, perhaps dating back 4000 years, has been indicated on the Indian subcontinent and may have its origin as a defloration color[1-40]. Red is the color of blood, therefore the color of life, and also the color of bridal purity. However, the red may also be the symbol of ripeness as in crops to be harvested".[1-2]

"Black has also long been of protective and curative value. For example, in nineteenth century, Northern India husband-men hung black pots in fields to scare spirits and evade the evil eye, while young women and children had their eyelids marked with lamp black. Similarly, charcoal was buried under the threshold to guard the household from harm, and also used as a preservative for milk[1-41]. The color black is also important in Scottish New Year customs. If the first person to enter the house on New Year's Day is a dark haired man carrying lump of coal, the family will have good luck during the coming twelve months.[1-2] Conversely, in many countries the appearance of a red-headed person presages bad luck."[1-2]

J. Hutchings further mentions that "the use of color in worship takes form of a design such as the Christian cross. It is the design not the color that provides the focus of worship. However, on some occasions, it appears that color itself is sacred. For example, splashes of turmeric made on the wall by a married couple in India are worshipped[1-41]. Also in India, the mere application of a streak of vermillion on the bride's head can be sufficient to create

a Hindu marriage[1-42]. In Australia, specific colors have specific functions with Dreamtime art, many being ritual and sacred in nature".[1-2]

Furthermore, J. Hutchings states that "another aspect to the sacred nature is that specific colors are apotropiac, that is, they protect. In Europe the protective color is red; in the Middle East, it is blue".[1-2] In Iranian towns, light blue-green and light blues frequently could be seen on ceramic ware, tiles, and as paint in houses. This color is believed to ward off effects of the evil eye[1-34].

Moreover, color can play an important role in curing and folk medicine. J. Hutchings mentions that "cures for jaundice may involve an infusion of the yellow sap of barberry, or gin or beer containing saffron. Red amulets help cure ailments such as fevers and rheumatism. The use of green in cures resolves mainly around the green of vegetation. Evergreens, particularly those bearing fruit in winter, have long been powerful life symbols[1-43]. Eating grass from churchyards, lettuce, or dosing with concoctions prepared from fresh or dried bramble arches, holly, palm, mandrake, vervain, or yarrow will cure or protect from a number of complaints[1-63]. Antibiotics are made from green mould. In general, natural greens can be used for the cure of specific complaints or to deflect the glances of the evil eye".[1-2]

He further mentions that "cures involving the use of specifically colored materials have been advocated since Babylonian and Assyrian times. Green stones such as green jade or nephrite were used to assist women in childbirth, or those suffering from kidney troubles, as well as to improve fertility in man and beast[1-44]. Without assuming continuity, in nineteenth century, Ireland green and black stones gathered in a moving stream were used in a charm for hip-joint disease".[1-2]

In addition, in his paper[1-2], J. Hutchings mentions that "aspects of appearance as well as color are important in traditional foods. On Lammas (loaf mass) Day, celebrations in medieval England included; the baking of loaves colored red (with rose petals), golden orange (saffron), yellow (lemon), green (parsley), blue (thistle), indigo (plum), and purple (violet). Iced fruitcakes, optionally tiered, are customary for weddings and christenings in many countries".[1-45, 1-2]

He further mentions that "people of all religions share foods during celebrations. Table settings and room decoration also play their part in festive meals. In food color preferences, there are regional variations (darker foods are preferred in the north of England and lighter in the south), and age variations (children prefer brighter colors than adults)". [1-2, 1-46]

In addition, J. Hutchings states that "rice is the staple diet of half of the human population and a source of much color folklore. Although, the most common variety is white, rice does occur naturally in a number of other colors. In China, black, red, yellow, and violet rice are used to treat various medical conditions, while rice that has been dyed red is given to wedding guests. Rice colored yellow with turmeric or saffron is widely used in custom in Iran, India, Pakistan and Malaysia. White rice is used as a contrast color in celebratory dishes. In Japan, red rice balls (steamed rice mixed with red beans) form an essential part of the celebration of many happy occasions such as weddings, New Year's Day, or anniversaries".[1-2]

Even though, many colors are used to dye eggs; however red is the most popular color for dying eggs over a large area of Europe and the East (Figure 1-6).

Figure 1-6. Decorated eggs for Persian New Year's table settings

Photo taken by: Mahshid Baniani

J. Hutchings mentions that "in 2900 BP, these were exchanged by the Chinese at spring festivals. Today in Britain, they are used in Easter games such as egg rolling. In Romania where the red painted eggs are called love apples and in Slovenia they represent love and health. In Hungary, where the name for Easter eggs is *piros tojas* or red eggs, and in Russia, Yugoslavia and Greece, they represent the blood lost by Christ on the cross". [1-2, 1-47]

Red is also a color used in Persian carpets a lot (Figure 1-7). Traditionally, most dyes were locally made from natural ingredients, and few colors could be produced this way. The easier the dye was to make or obtain, the more liberally this color was used. Frequency correlates further with popularity.[1-34] Thus, red, for example, which was relatively easy to make, dominated in color schemes, while yellow, whose dye required a slot of cumbersome work, was used rarely and was not considered beautiful in rugs. This hierarchy of popularity and frequency remains the same even now that virtually any color can be achieved easily by using commercial dye[1-34].

Figure 1-7. Wools and dyes used in Persian Carpets – Carpet Museum, Tehran

Photos taken by: Mahshid Baniani

Color plays an important role in calendar customs as well. John Hutchings mentions that "the traditional British homes are decorated once each year in celebration of Christmas. Christmas in Britain is associated with red and green. This association has recently been imported into Japan coinciding with a decline in traditional Buddhist practice and its compatibility with existing customs of the New Year period. The lucky red and white are traditionally associated with New Year's Day. "The Celebration begins with *bonenkai*, or "forget the year" parties. Events begin to warm up towards the end of the month, with decorations appearing over doorways, and red and white cabbages being planted auspiciously in tubs."[1-48] Much of the traditional food eaten over this period is red and white". [1-2] Tektronix argues that "a combination of red over white represents celebration and signifies the life force to the Japanese"[1-37]. In Melanesia, Red and white are used as a combination for ritual decorations, and for representing the sacred heart of the Catholic Church in Mexico as well[1-37].

Now, to take a look at unlucky colors – John Hutchings[1-2] mentions that "belief that green is unlucky has traveled to North America, no doubt imported by immigrants from Britain and Ireland. Hence, it is unlucky to marry in green in Texas [1-49], in the Midwest it ought not to be used for racing cars [1-50], and it is even bad luck to ride in any vehicle of that color in Arkansas".[1-51]

Hutchings further states that "in Britain and Ireland, green is an unlucky color and many will not wear it. Some will not have the color in their home[1-52]. The bad luck is reinforced at wedding celebrations in the northeast of Scotland. If the younger sister marries first, the luckless and disgraced elder sister is taunted by being made to wear green stockings or garters at the dance after the wedding".[1-2]

In addition, Hutchings[1-2] states that "Among mythical characters, fairies take much of the blame. For examples, "I was once told off by a Cornish "grandmother in law" for wearing green the piskies color".[1-2] Green gowns are worn by witches, devils and demons[1-53]. The hunter wears green to hide among the greenery so that he may kill animals sheltering there; the Devil wears green to hide himself among men so that he may capture their souls[1-54]".

"Another argument is that green-leafed trees are followed by black bark in winter and black is for mourning. Hence to avoid death, one must avoid wearing green[1-55]. Also green and brown were unlucky colors, presumably because they were earth colors, that is, the rocks would "attract" them".[1-2]

J. Hutchings states that "Rational reasons for unlucky green include the stomach ache that comes after eating overripe green meat or unripe green fruit. In the nineteenth century, it was the color of green arsenic-pigmented wallpaper which, when damp, gave off the poisonous gas arsine".[1-2]

However, J. Hutchings further argue that "Ireland adds its own particular complex (and not totally agreed) dimension to the color green. There are three strands to this dimension – Saint Patrick, the People and the Bloodshed, and the Emerald Isle. Today, on Saint's Patrick's or Green Ribbon Day, green still has positive connotations among both Roman Catholics and Protestants in the North and the Republic alike. The five million Irish migrants to North America during the seventeenth, eighteenth, and nineteenth centuries took green with them. Today the Irish there have no hesitation in celebrating St Patrick's Day with green clothes, make-up, and green beer[1-56]. Even the Chicago River may be dyed green for the celebration[1-57]. In early Irish mythology, the sovereignty of Ireland is symbolized as a woman, sometimes in green, sometimes in purple or deep blues".[1-2]

Here, let's add that color means anything we want it to mean, and that is fundamental to color symbolism in language[1-52]. J. Hutchings mentions that "Green as all major colors has many symbolic meanings which involve both positive and negative feelings and emotions. For green, most of these appear connected with life, springtime, and growth or with decay[1-58]. Once such rules are established (that is, green symbolizing growth, its use in cures and denoting bad luck), beliefs or usages that grow around it normally work for the perceived needs of the community and regionalism occur".[1-2] In Iran, green is visually the most prominent and emotionally the most highly valued color. It signifies food, fertility, and prosperity[1-34].

Hutchings further mentions that "the positive and negative nature of symbolic green is not confined to the English language. For Hindus and Buddhists, it can mean life and

death[1-59]; for Chinese, life and disgrace[1-61]; for Muslims in North Africa, growth and corruption[1-60]. All common symbolic meanings for green are derived from the growth that occurs in springtime and the growth of decay. This phenomenon appears to be cross cultural; hence non-regional".[1-2]

In addition, Hutchings states that "apparent contradictions can be resolved using the *Principle of Singularity*. This states that "at any one time, to any one person, a color symbolizes only one emotion or feeling regardless of what that color may symbolize to another person or to the same person on another occasion".[1-2]

Having defined meanings of colors across cultures to some extent; next, I will talk about a research[1-64] I did regarding bedroom wall color preference across cultures.

1-4. A Research on Bedroom Wall Color Preference across Cultures

1-4-1. Purpose of this Research

People learn through the unique images, objects, places and experiences they have had through life. It is a life long process, affecting not only the child, but the adult too. In addition, cultures do differ in their preference and meaning of colors[1-26]. As it was observed earlier in this chapter, there are certain traditions, customs, and meanings regarding colors and color usage in daily life and in architecture among different cultures.

Therefore, in 2009, I decided to do a research[1-64] on how different people from different cultures think about architecture and interior design.

Although, the main focus was on color, but as mentioned, the objective of this research was to identify and investigate how different people with different backgrounds, customs, rituals, architecture and life styles think towards interior design in general.

1-4-2. Methodology

As to find out how different people think towards interior design, a questionnaire regarding one's "dream house" was prepared; i.e. if they could have their own house the way they want it, without considering anything (politically, geographically, economically, etc), how they would want it to be. These questions were formulated to be easy so that anyone with any kind of background, lifestyle and profession could easily understand and answer.

The questions were mainly divided into 3 sections. The first part was about the house itself; i.e. how many bedrooms, bathrooms, floors, etcetera they would want in their dream house; or what color they want their bedroom walls to be. The second part was about the house style and the last section was a question regarding the features they would want in their house.

As for house style and house-features, multiple selection answers were acceptable. There were also pictures provided, so they could easily look and select.

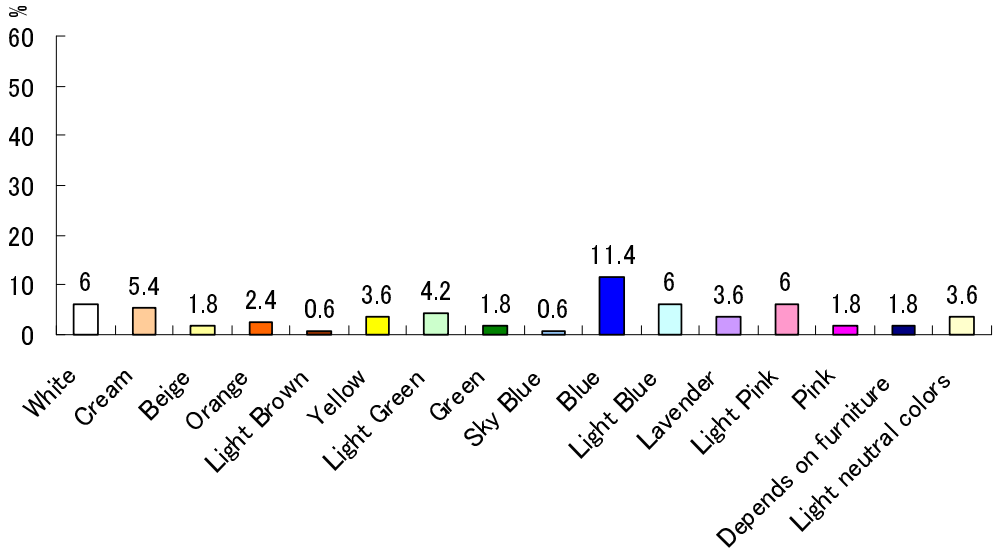
1-4-3. Research Subjects

This questionnaire was handed out to people with an age range of 20 to 40 in North America, South America, Europe, Japan, China, Korea, Philippines, India, Pakistan, Egypt, Australia and Iran. This was mainly done virtually, and in total 455 data was gathered.

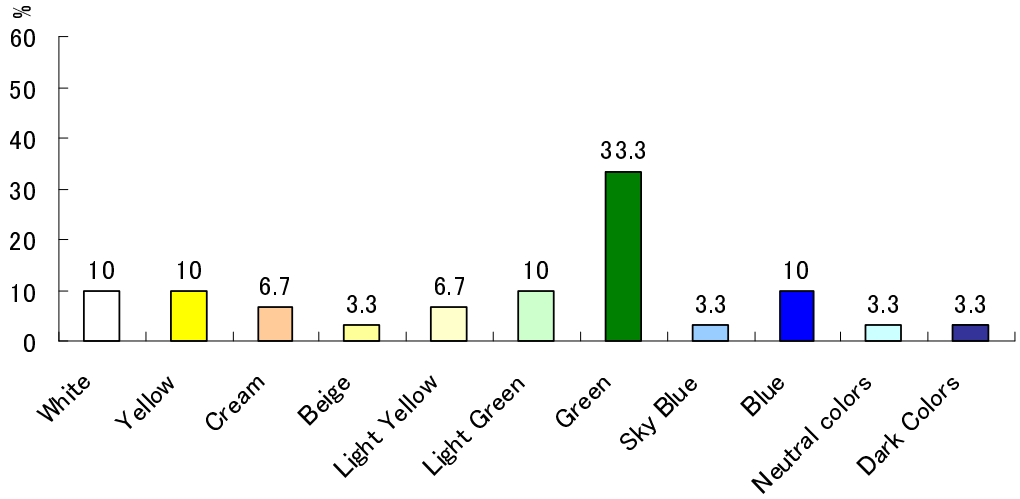
1-4-4. Data Analysis and Results

Since the main focus was on color, therefore, the analysis and results discussed here only focuses on the analysis of bedroom wall colors. In the questionnaire, the respondents had the free choice to write their desired color(s) for their bedroom walls – there were no color selections to choose from or no color samples were shown to them. This was done on purpose to see all the different color choices and varieties. The respondents wrote down

between 1 to 5 color varieties (some subjects wrote only 1 color, whereas some wrote up to 5 color varieties) (Figure 1-8 and Figure 1-9).

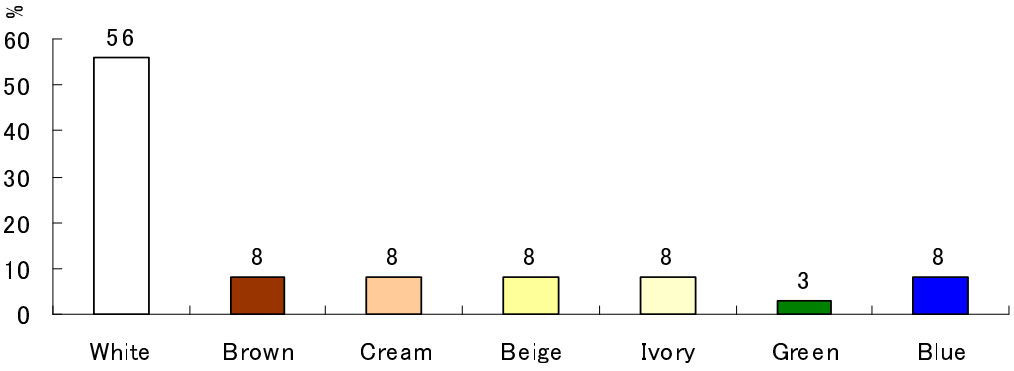


Color Varieties in Iran (53 Subjects)

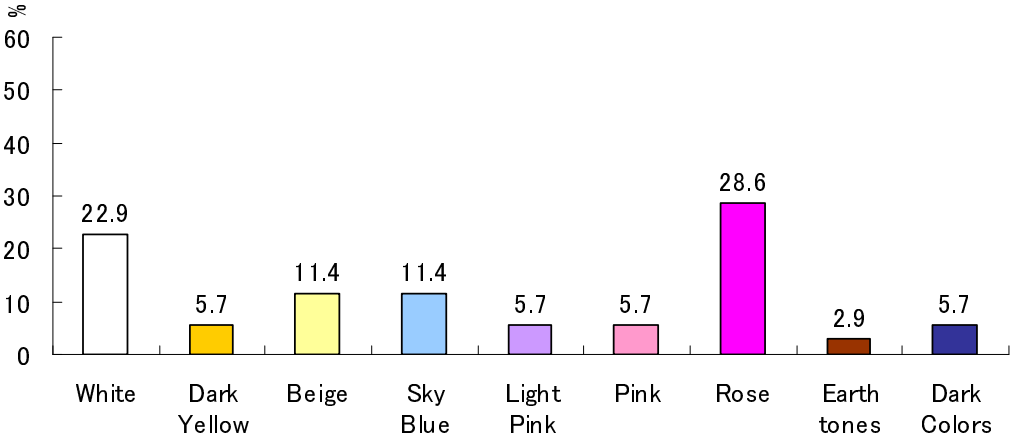


Color Varieties in Australia (28 Subjects)

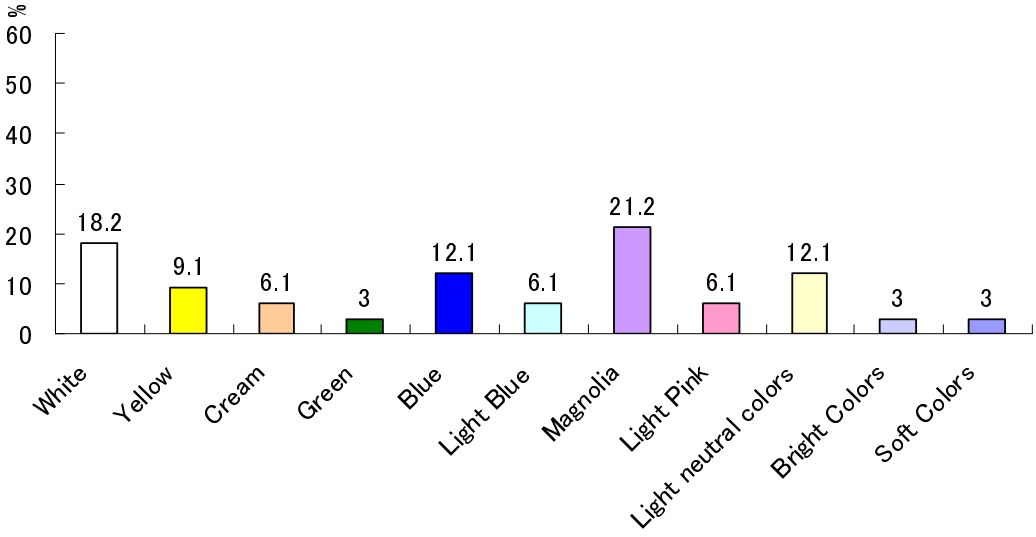
Figure 1-8. Color varieties in Iran and Australia



Color varieties in Japan (35 Subjects)



Color varieties in Egypt (32 Subjects)



Color varieties in Britain (30 Subjects)

Figure 1-9. Color varieties in different regions (Japan, Egypt, and Britain)

As it can be seen from Figure 1-8 and Figure 1-9, compared to other countries, Japan has the least number of color varieties. Moreover, only in Japan more than 50% of the subjects have chosen white as the color they want for their bedroom walls and this wasn't seen in other countries.

In this section, only some of the graphs are shown; because with only presenting these graphs, it is enough to show the main results obtained from this study and there was no need to present all the graphs from all the countries.

1-4-5. Main Findings

Some of the important findings of this study are:

1. There is not much color variety seen in Japan and more than half of the subjects wanted white for their bedroom wall color ($P<0.01$).
2. Rose was the only color picked by only Egyptians ($P<0.001$).
3. Lavender was only written in Iran and North America ($P<0.05$).
4. Blue was a popular color among the subjects ($P<0.05$).
5. Turquoise was the only color written in North America (Canada).

These findings suggest that there are certain color preferences among people from different cultures. Therefore, the rest of this chapter will focus on color preference studies across cultures [1-5-1], gender [1-5-2] and ages [1-5-3].

1-5. Color Preference and Demographics

1-5-1. Cross Cultural Color Preferences

Preferences studies investigated which color people found the most desirable. Researchers who completed the classic color preference studies (Eysenck, 1941; Guilford and Smith, 1959; Simon, 1971) suggest that individuals find one color more desirable than

others and may consistently select it over others. These studies were based on color theory that suggests color have certain characteristics and, therefore meaning for viewers, which affects their preferences[1-65,1-66,1-67].

Color preference should increase with positive feelings (or decrease with negative feelings) towards an institution strongly associated with a color[1-68]. Palmer and Schloss (2010) formulated and tested the ecological valence theory (EVT), stating that people's average color preferences are determined by their average preferences for all objects and institutions associated with those particular colors. In brief, the EVT posits that people like colors to the extent that they are associated with things that those people like (e.g. blues and cyans associated with positively valued clear sky and clean water) and dislike colors to the extent that they are associated with things that those people do not like (e.g. browns and olive colors associated with negatively valued feces and rotting food).[1-111] However, Schloss et al.'s study (2011) presents the effects of university affiliation and school spirit on color preferences, and they conclude that color preferences must be learned rather than inborn, unless one believes that the colors of the university a person attends is genetically determined at birth[1-68].

Wenzel, Langer, Kassar and Bencze[1-6] define color preference as the tendency to prefer certain colors over others. Some colors are perceived as pleasant and attractive, while others appear less pleasant or neutral, sometimes even repellent.

Park et al. [1-26] argue that "researchers of cross cultural studies of color fall into two categories. One group of researchers support "color universals". They assert that individuals in all cultures have the same preferences for color[1-26]. Whereas another steam of researchers assert that culture is one of the main underlying reasons that individuals of various cultures prefer different colors".[1-26,1-27,1-28, 1-29,1-30]

In addition, Park et al. [1-26] state that "in one of the earliest studies on color meaning across cultures, Garth (1931) supported color universals. He conducted a study to uncover different reactions to six saturated colors among different racial groups". He concluded that "color preference in a race is positively influenced by racial tradition and custom" (p.116). His sample group included school age children. His findings revealed that color

preferences of these groups differed gradually with education. Garth concluded that "natural influences (tradition, formal education, and aesthetic ideals) tended to make races differ in color preference while individuals of the same race had similar preferences".[1-29]

Although, reactions to color are considered highly individualized, universal color preferences are thought to exist. For example, blue is the color most frequently chosen by adults (Grieve 1991)[1-69]. However, exceptions exist. Silver[1-70] reports that "African American subjects like colors in the red-purple-black range, whereas white subjects prefer blues and greens". Similarly, Wiegersma and Van der Elst (1988) conducted a cross-cultural study and report that "blue is the color chosen most often, except by respondents from Senegal and the Transkei, who prefer red and black".[1-71] "In India, Hindus consider orange the most sacred color, whereas the Ndembo in Zambia do not even consider orange as a separate color" (Tektronix 1988)[1-37]. Moreover, Ward[1-72] argues that "blue, red and green are the most popular colors".

Madden et al. [1-3] did a cross cultural study with undergraduate students from countries in East Asia, Europe, North America, and South America. They concluded that "overall, blue was the most liked color. Respondents from Canada rated black as their most liked color, and blue was a close second. After blue, green and white were most liked across countries and shared similar meanings". [1-3]

Choungourain (1968) through the method of paired comparisons, studied preferences for eight Otswald hues of 160 university students from United States, Lebanon, Iran, and Kuwait. His findings led him to conclude that "there are definite cultural and some gender differences among these groups' color preferences".[1-27] In another study, Choungourian (1969) studied the color preferences of 308 students from United States and Lebanon in different ages and educational levels, through the use of eight of Otswald's color and paired comparisons again. And his findings for this study revealed that "color preference changed from earlier developmental stages to later adulthood, validating Garth's earlier findings".[1-28]

In another study, Radeloff found that "all psychological types, except introverted thinking types, showed significant differences in seasonal color preferences as related to

apparel". [1-73] In addition, based on the findings, she suggested that "color distinctions (preference) may be part of a person's natural propensities". [1-73]

Park et al. [1-26] mention a study done by Whitfield, where Whitfield[1-74] investigated subjects' preferences of wall color selection for a residential interior. His results showed that "individual differences in age, gender, and social status were related to color selection and preference".

Hogg (1979) had ten architects and ten non-architects rate color chips and a simulated interior space on 24 bipolar adjective scales. Five factors were identified which were as following: dynamism, spatial quality, emotional tone, evaluation, and complexity. It was further observed that dynamism, spatial quality, and emotional tone were respectively associated with the chroma, value, and hue of the interiors.[1-75]

Miho Saito (1994) conducted a comparative study on color preference with 474 subjects in Tokyo, Taipan and Tianjin. The subjects were asked to choose from a color chart and to indicate their three most and three least liked colors, along with the reasons for their choices. Saito found that "white was highly preferred in all three groups". She suggested that "this is due to the Asian meaning of the color white". Saito further concluded that "preferences of associative images of color are based on environmental and cultural aspects and may be one of the important factors that influences color preference".[1-30]

In addition, Park et al. [1-26] mention a study done by Hupka, Zaleski, Otto, Reidl, and Tarabrina (1997), where they conducted a cross-cultural study to investigate the colors of anger, envy, fear, and jealousy. They found "more cross-cultural agreement in color-emotion associations for anger and fear than for envy and jealousy". The findings support the position that "the associations for anger and fear may originate in sensory experiences common to all human beings. Whereas the cross-cultural differences for envy and jealousy suggest that the association may be a product of culture".[1-76]

Park and Guerin[1-26] did a cross cultural study among four cultures (Japan, Korea, United States and England), and concluded that there were similarities between the preferences of US and England. There were also similarities between the preferences and color meanings of Japan and Korea. However, there were preference differences between

Eastern and Western cultures.

Garth (1931, pp. 115-136) summarized the results of color preference for the Whites, Negroes, Indians, Filipinos and Mexicans, and the fact stands out clearly that "white" is either least preferred (by the Whites, Negroes, and Indians) or next to the least preferred (with the Filipinos and Mexicans), which is interesting because Garth has said white "is not psychologically speaking a color at all" [1-29].

N.C. Shen[1-77] conducted a color preference test among four groups of Chinese students. He concluded that blue was the preferred color, followed by white, green, orange, violet, yellow, red, gray, and black.

Gunnerod[1-78] argues that "Japanese consumers prefer white, whereas consumers from Hong Kong prefer red".

1-5-2. Color Preference and Gender

Many studies have shown that when considering color choice, the difference between genders is very significant. Gender differences in color preference remain unexplained. Gendered preferences have been found in adults (Ellis & Ficek, 2001)[1-79] and children, and across some cultural groups (Hulbert & Ling, 2007; and Saito, 1996)[1-80, 1-81]. Women might be more color conscious and their color choices are more flexible and diverse than men. Women are more likely than men to have a favorite color and to prefer softer colors than men[1-22].

Within-culture historical change supports the idea of social construction in color preferences. For example, the current stereotypical American assignment of pink to girls and blue to boys was reversed a century ago, when *Ladies Home Journal* (in 1918) described pink as "a more decided and stronger color," appropriate for boys, compared with blue, "which is more delicate and dainty"; and an American newspaper in 1914 advised, "If you like the color note on the little one's garments, use pink for the boy and blue for the girl, if you are a follower of convention"[1-82].

Children are aware of differential dressing pattern quite early on: by the time they enter

preschool, they make decisions about gender identity based on color. For example, Picariello, Greenberg, and Pillemer (1990) presented preschool children with toy animals that were identical except for color and asked them to identify the gender of the toys. The children identified the animals in accordance with gender-based stereotypes, labeling pink and purple animals as "girls" and blue or brown ones as "boys"[1-83].

LoBue and DeLoache (2011) did a large cross-sectional study among children aged 7 months to 5 years and concluded that by the age of 2, girls chose pink objects more often than the boys did, and by the age of 2.5, they had a significant preference for the color pink over other colors. At the same time, boys showed an increasing avoidance of pink. These results suggest that between the ages of 2 and 3, children begin to understand and talk about gender; girls begin to show a growing preference for the color pink, while boys begin to show a growing avoidance of it[1-84].

Garth (1934) states that the largest group of young people afforded by the literature is that of 212 kindergarteners. This is reported on by Dashiell[1-110] who in the same report gives comparative results between these kindergarteners and a group of college sophomores. He found a striking similarity of preference between the groups of young and old subjects[1-83]. Moreover, Garth[1-112] concluded that red is held in high esteem by all age groups of children through kindergarten. It drops in the first grade and this suggests adult influence. Furthermore, Boyatzis and Eades[1-85] concluded that artistic gender differences are apparent as early as 4 1/2 years of age, and reveal themselves through technical, nonrepresentational features.

Many other investigators have reported differences between the sexes in preferences for colors. Dorcus found that "yellow has a lower affective value for the females than with the males"; St. George maintains that blue for men stands out far more than for women; and Jastrow found that women preferred red to blue, men blue to red.[1-65] Von Allesch, on the other hand, did not observe such difference, and Garth, after examining several thousands cases, came to the conclusions that "the color sequences between the two sexes are about the same".[1-65]

Additionally, research has consistently demonstrated that during the elementary school

years, boys and girls produce different kinds of pictures. A specific example comes from a study of 8-to-11-year-olds who were asked to draw pictures of water; girls drew calm rivers and oceans, boys drew storms at sea[1-86]. There are also technical differences, as between ages 9 and 12 years boys draw angular, geometric shapes, but girls are likely to produce curvier, organic forms[1-85].

In a study, Kilinc[1-87] evaluated the color preference of 312 girls and 316 boys between the ages of 6 and 9 using clothing types. He concluded that magenta was the color most preferred by the girls. After magenta, the next most preferred colors were red-violet, red, and red-orange. The colors least liked by the girls were gray, blue, green, blue-green and black. On the other hand, the colors most preferred by the boys were black, blue, cyan, and yellow. The colors liked the least by the boys were blue-green, magenta, red, and yellow-green. Whereas girls' top color choice was magenta, the top choice for boys was spread evenly across black, blue, cyan, and yellow.

Ferrante (1995) studied color preference differences in retirees and found that the pattern of frequencies for preferred color differed as a function of gender[1-88]. The findings of the elderly subgroups were similar to findings of an earlier study of young adults by Silver, McCulley, Chambliss, and Charles (1988) [1-89].

N.C. Shen conducted a color preference test among four groups of Chinese students. He concluded that the boys had a strong preference for orange, blue, and violet but a weak preference for gray, black, and yellow; while the girls strongly preferred white, blue, and green, and least preferred black, gray, and red. It is interesting to note that those colors peculiar to the boys' preference are of a darker type than those peculiar to the girls'. On the other hand, the color which the boys exclusively disliked is brighter than the disliked color of the girls[1-77].

Philip Cohen[1-90] did an online survey with 2000 participants between the ages of 20 to 79, and concluded that blue was preferred by more men, while red, pink and purple were preferred by more women. Moreover, a marginally significant effect showed women having higher odds of preferring pink when they have sons only.

Eysenck did an experimental study on color preference with mostly university subjects

of men and women, and concluded that the rankings of the 15 men and the 15 women agreed in placing blue, red, green and violet above the two other colors (orange and yellow), however, they reversed the position of yellow, which is preferred by the women, and orange which is preferred by the men[1-65].

In addition, Walton et al.[1-91] conducted a study of color preference with 1279 university students (total of 464 men and 825 women subjects) using the method of paired comparisons. They concluded that one of the persistent sex differences was the greater value of orange as compared with yellow for the men and the reverse relative evaluation of those two colors by the women. In other words, men preferred yellow to orange. On the other hand, the two sexes agreed persistently in the relative values of blue and green. Moreover, women's color preferences are somewhat more inclined to fluctuate from one year to another than are the men's, but individual differences in color preferences within any one year are about equal for the two sexes.

An examination of the color preference scale for 1011 subjects shows the sequence for the colors to be, reading from most preferred to least preferred: red, blue, violet, green, yellow, orange, and white. The girls preferred red most of all and the boys blue[1-92]. Moreover, Chiu et al. [1-93] (2006) compared color preferences in 3 to 12 year old children and concluded that girls chose pink/purple significantly more often than the boys did.

1-5-3. Color Preference and Age

Color preferences appear to change from childhood to adulthood. Infants of both sexes prefer reddish colors[1-94, 1-95], while blue is most commonly favored among adults, especially men[1-80]. Relative to men, American women are more likely to prefer pink or purple[1-79].

Several studies have demonstrated that both infants and preschool children prefer primary colors (such as red and blue) to secondary colors (such as pink and orange)[1-96,1-97,1-98]. Others have shown that preschool-aged boys and girls prefer red to all colors[1-98]. Similar preferences for red have also been reported for infants[1-94,1-95,1-96]. Conversely, other studies have shown that newborn infants, rhesus monkeys, and even

pigeons prefer blue to any other color[1-99,1-100,1-101,1-102].

Child et al.[1-103] did a study with children from grades 1 to 12, and concluded that there are consistent age trends, from grades 1 through 4, preference for high chroma increases, however, from grades 4 through 12, there is a fairly steady decrease in high-chroma preference. This appears in both boys and girls.

Hunt (1959)[1-104] found that red was the most popular garment color for children aged between 5 and 6, but its popularity gradually diminished as they became older. Green was the third most preferred color at the age of 5 to 6 and gradually increased in popularity by the ages of 9 to 10. Additionally, statistical analysis in Kilinc's[1-87] study also revealed that age affects color preference in most garment types. Warm colors like magenta, yellow, and red were preferred more for clothing by younger children and color preferences moved towards colder and neutral colors as the children became older.

Koleoso et al.[1-9] conducted a cross-sectional study on color preference with 60 subjects (30 males and 30 females) from the ages of 3 to 12. They concluded that the order of color preference of children whose age ranged between 9 and 12 years old was red, yellow, tint, white, green, blue, brown and black, while the order of color preference for children from 3 to 8 years old was red, tint, yellow, white, green, brown, and black.

Cimbalo, Beck, and Sendziak (1984) did a study regarding "the association of color and emotion with primary (second and third grade) students and college students. For both groups, the ratings of colors significantly varied: Yellow, orange, and blue were designated as happy colors, and red, black and brown were designated as sad colors".[1-105]

Burkitt, Barrett and Davis[1-7], in a study of children's color choices for completing drawing affectively characterized topics, argue that, in all age groups and for all topics, the children used more preferred colors for the nice figures, their least preferred colors for the nasty figures, and colors related intermediately for the neutral figures. It was also found that in all age groups and for all topics, black tended to be the most frequently chosen color for coloring in the drawing of the negatively characterized figures. By contrast, primary colors were predominantly selected for the neutral figure; while a wide range of mainly primary and secondary colors were chosen for coloring in the nice figures. This means that

children have learned to associate pleasant situation to bright colors and liken unpleasant conditions to dark colors.

Adams and Osgood[1-107] (1973) conducted a color preference study with high school students in 20 countries, and asked them to rate seven colors on 12 semantic differential items. In the tradition of Osgood, Suci, and Tannenbaum (1957)[1-106], Adams and Osgood[1-107] report "results for the dimensions of evaluation, potency, and activity as defined by the 12 items. Blue was the mostly evaluated color, followed by green and white. The most potent colors were black and red. Red was the most active color; whereas black and gray were the most passive colors".[1-107]

A study of the color preference of Japanese children was reported by M. Imada in the Japanese Journal of Psychology of August, 1926. The subjects of the experiment were 1059 school children from the first grade through the tenth grade. He found out that the order of preference for color was: blue, red, green, yellow, violet, and orange. Orange placed low, and red and blue were relatively high[1-108].

An examination of the color preference scale for 1011 subjects shows the sequence for the colors to be, reading from most preferred to least preferred: red, blue, violet, green, yellow, orange, and white. It is not claimed that education in the schoolroom is the only influence causing changes in color preference but it is interesting to note that while white remains the point of origin up through the sixth grade, it rises to first place in the seventh grade[1-92].

Akcay et al. [1-109] concluded that perception of color is different between age groups. For example, red represents love and blood for teens, but blood and passion for the 55 and older age groups.

1-6. Conclusions

In this chapter, the role of color in architecture, meanings of colors across cultures, and color preferences across cultures and demographics were discussed while referring to other studies and researches.

It was observed that color has been used as an important feature of architecture since remote times, and the usage of different techniques and materials like glazing, ceramics, pottery and bricks have enriched the usage of color.

It was further observed that although in early modernism color faded from architecture; however, public never really accepted this and by the end of modernism, by having architects like Le Corbusier, color was used in architecture again. Furthermore, during the 80s (and onwards), color has been a key aspect of architecture in order to bring architecture closer to common public. And in the last few years, more and more architects have begun to use colors as a reclaiming tool of their art.

Moreover, it was observed that from the cultural norms, people form their interpretations. Therefore, different meanings are interpreted by different socio cultural groups. Correspondingly, similar meanings occur across groups with shared experience.

Furthermore, color researchers have investigated people's social meaning, responses and preferences to colors. They have investigated the relationship of color to many different variables. Some of these studies, particularly color preference studies across culture, gender and ages were discussed. Since this is going to be a cross cultural study, therefore, these studies were discussed; so that if during this study, any differences between cultures are observed, it can be concluded that culture has played an important role in color preference as well.

From the studies discussed, it was concluded that similarities and differences of preferences exist between or among cultural groups and although, reactions to colors are considered highly individualized, universal color preferences exist. For example, it was observed that red is a favorite color of children until kindergarten, or blue is a popular color among adults. However, these past researches lack other dimensions. They don't discuss if other factors (such as social environment) influence color preference. Moreover, most of these studies are done among younger ages and there are not many studies focused on adults.

In conclusion, it was observed that:

I. Previous studies have not concluded if other factors such as social environment

influence interior color preference.

II. From 80s onwards color has been a key aspect of architecture, and it is because of the designers and architects that people have got to know colors more and have started using them in their products, fashion, and architecture.

Based on the limitations of the previous studies, the role of color in architecture, and the fact that from 80s onwards color has been a key aspect of architecture in order to bring architecture closer to common public; the experiments from Chapter two onwards will be conducted in order to see what effects color preferences of the *common public*.

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CHAPTER TWO

Personal Background and Color Preference

2-1. Background and Purpose of this Research

As seen in chapter one, in a previous research[2-1], a cross cultural study regarding interior color preference was conducted and it was concluded that there is not much color variety when Japanese people are choosing colors for their bedroom walls and they are all focused on white more so than other respondents.

Furthermore, M. Saito has done a cross cultural study[2-2], and concluded that Japanese people like white (more so than other respondents). In addition, Gunnerod[2-3] concluded that Japanese consumers prefer white, whereas consumers from Hong Kong prefer red. T. Kanda[2-4] conducted a cross cultural study among Japanese kindergarten pupils, Japanese university students and foreign university students from Asia and concluded that orange is the most favorable color for candies and black is the most unfavorable one. Moreover, he concluded that preference of Japanese kindergarten pupils and Japanese university students are similar but differ from that of foreign university students from Asia on the whole.

As known, there are several other studies regarding color preference across different cultures and demographics. Some of these studies were introduced in chapter one, however, a brief introduction to a few more studies will be done here. Garth[2-5] studied color preference using Indians, Caucasian, and the mixed-race of the two ethnic groups. Jacobs and colleagues (1991)[2-6] conducted a cross cultural study with student subjects from Japan, People's Republic of China, South Korea and United States. Silver[2-7] reports that African Americans like colors in red-purple-black range, whereas white subjects prefer blues and greens. Similarly, Wiegersma and Elst[2-8] report that blue is the color chosen most often, except by respondents from Senegal and Transkei, who prefer red and black. Shoyama et al. studied color preference for clothing using Japanese and Korean women as the observers.[2-9] The results showed that the Japanese observers preferred black and light grayish orange, whereas Korean observers preferred dark blue and light gray.

As it can be seen all of these studies are focused on cultural influences and although, it can be concluded that culture plays an important role on color preference; however, these

studies don't show us if other factors such as social environment influence color preference.

Similarly, there are numerous studies regarding color preference and gender. Hurlbert and Ling[2-10] found female observers preferred redder colors more than the male. Guilford and Smith[2-11] concluded that men are more tolerant of achromatic colors compared to women. Garth and Porter[2-12] examined color preference of 1032 young children and concluded that red was favored most by the boys and blue by the girls with red running a close second. Walton et al.[2-13] reported that the university student male subjects preferred orange to yellow but for the female subjects the preference is reserved. Harris concluded that girls tend to prefer lighter colors than boys[2-14].

Given in this chapter are just a few examples of studies regarding color preference across genders; however, these (and other) studies have been focused on the colors used or favored by each gender and although, preferences can be observed across genders, however these studies do not cover other areas such as number of color varieties used by each gender or etcetera.

Moreover, there are also studies concerning color preference and age. Walsh et al.[2-15] found that 5-year-old-children generally prefer red candy over green, orange and yellow candy. Read and Upington[2-16] concluded that young children prefer red in interior environment. Zemach and Teller[2-17] concluded that 12-week-old-infants showed preferences for color visual stimuli over white visual stimuli. Terwogt and Hoeslma[2-18] reported that children disliked white and black. Similarly, Pitchford and Mullen (2005)[2-19] revealed that children preferred gray and brown less than other basic colors. Cimbalo et al.[2-20] tested the association of color and emotion with primary and college students. Adams and Osgood[2-21] studied color preference of high school students in 20 countries. Irvin et al.[2-22] did an experiment with children in grades 1-12 using color pairs. Jadva et al.[2-23] concluded that both boy and girl infants prefer reddish colors to blue colors, and rounded shapes to angular shapes.

These studies (along with the other studies seen in chapter one) have mainly been focused only on gender differences across ages and they have not concluded if other factors such as social environment influence color preference. Moreover, they are mainly focused

on younger ages.

There are many other studies regarding color preference and culture, age and gender, however, these studies have never been taken further. Most people have relatively strong and idiosyncratic color preferences, but little is known why they have the preferences they do (Eysenck, 1941[2-24]; Granger, 1955[2-25]; Guilford & Smith, 1959[2-11]; McManus, Jones & Cottrell, 1981[2-26]; Hurlbert & Ling, 2007[2-10]). Neperud and Freeman[2-27] concluded that preference might be "personal idiosyncratic phenomena not tied to development considerations" (p.86). Perhaps, this phenomenon as they refer to it, is "an individual difference determined in part by learning experiences, past experiences, socialization, cultural values, and maturation" (Newton, 1989, p.77) [2-28].

Therefore, in this research, I will take these studies further and through comparing different social and architectural contexts and experiments, I clearly identify and investigate some of the factors influencing interior color preference. I have taken social environment as the primary focus and the influences of a person's residential, regional, educational and personal backgrounds have been examined. Therefore, social environment has been defined by means of regional, residential, and educational; and education has been defined as part of social environment.

2-2. Methodology

2-2-1. Respondents

This study was done between August 2011 and January 2012 in Iran and Japan among university students within the ages of 20 to 30 (Table 2-1).

Table 2-1. Number of Gathered Data (Applicable Data)

Iranians Living in Iran	Japanese	Foreigners Living in Japan	Total
101(94)	122(115)	96(92)	319(301)
F=47, M=47	F=86, M=29	F=52, M=40	F=185, M=116

F=Female, M=Male

The foreign respondents were from Laos(2 subjects), Vietnam(15), China(8), Thailand(3), Cambodia(7), Korea(3), Tajikistan(2), Kazakhstan(2), Kyrgyzstan(7), Latvia(2), Estonia(2), The Philippines(3), Romania(2), Italy(3), Netherlands(3), France(2), Germany(4), USA(12), Brazil(1), Costa Rica(4), Nicaragua(1), Tunisia(1), and Malawi(3).

2-2-2. Procedure and Method

In the beginning, each respondent was given 2 drawings (Figure 2-1) and 24 color pencils (Figure 2-2) and they were asked to paint the drawings according to their preferences [Appendix I]. They had 10 minutes to color out each drawing.

Figure 2-1. Sample of the interior and exterior drawings

Although the word "interior" is used for the description of Figure 2-1, but I have picked a bedroom drawing and the reason for this is because bedroom is considered as someone's private room and it is one place where anyone can make the desired changes.

Figure 2-2. Pictures of the front and back of the color pencils given to the subjects

Photos taken by: Mahshid Baniani

After the drawings were done, the subjects were handed a questionnaire regarding their personal background which was divided into 3 sections of regional, educational and residential (Figure 2-3). In addition, there were also a few personal questions regarding their major, nationality, favorite color, and background of their parents [Appendix II and Appendix III].

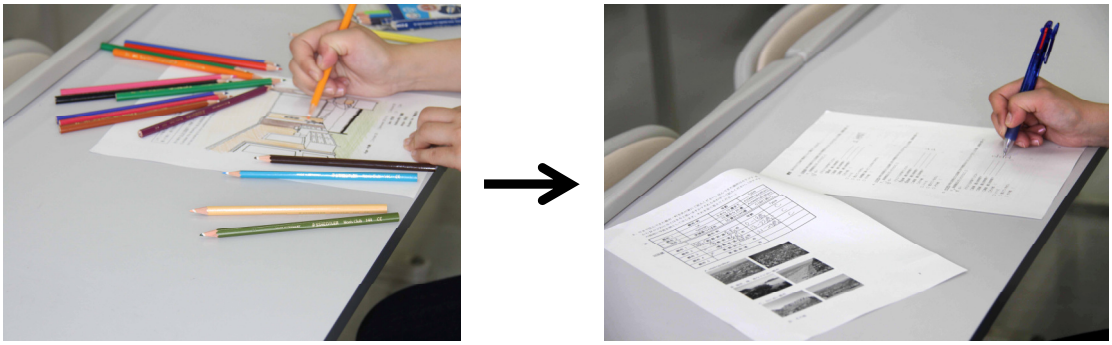


Figure 2-3. Procedure of the experiment

Photos taken by: Mahshid Baniani

As explained earlier, bedroom has been used as means of interior in this study; however, there are a few studies which argue what colors are suitable or have been used for interior (although, that is their main focus and they do not conclude what effects color preference). For example Banu Manav[2-37] concluded that pink was preferred for sleeping room and

children's room; blue was selected for living room; yellow was offered for dining area; and white which is associated with purity, was offered for kitchen, bathroom, entrance, and stair-hall by subjects from Turkey. In addition, Nadine Bertin[2-38] argues that in the USA, bright primary colors are popular choices in plastics and enamels such as toys and house-wares. Moreover, yellow is a popular choice in every area of the house; while white and off-white grounds are popular for bed and bath products.

2-3. Data Analysis and Results

2-3-1. Data Analysis

The data was analyzed by comparing the regional, educational, residential and personal sections in the questionnaire and the number of the color varieties and the colors used in the drawings. Not only the number of color varieties and the colors used were considered, but I also verified if they have used any patterns on the walls, thus, to see the creativity, this method – drawings with the color pencils – was the most appropriate. In addition, the data was analyzed by Microsoft Excel; however, JMP (Statistical Discovery Tool from SAS) was further used in data analysis in order to show the data significance. In JMP, the data was analyzed and signified by performing a t-test and Analysis of Variance (Means/ANOVA).

The colors used in the drawings – even in the smallest detail – were one by one matched with the color pencils (given during the experiment), and were counted carefully. For example if blue, red, yellow and orange were used in the bed, the total count of the used colors would be 4. In addition, 10.3% of the subjects used patterns in the drawings (this will be explained later in this chapter [2-3-10]). The colors used in the patterns were counted carefully and patiently as well. Moreover, some of the subjects (4.6%) used "mixed shades" (or mixed colors). This is when the subjects used different colors to color out a part of the drawing (for example a section of the wall/column). There is a possibility that they used this "technique" in order to create more colors that were not included in the 24 color pencils. However, the most number of color varieties used for this "technique" was 5 and

these colors were counted carefully as well.

In addition, in the questionnaire, there were questions (e.g. what is your favorite color) where the respondents were free to write any color they wanted. In these cases, I purposely matched the colors written by the subjects with the colors of the 24 color pencils (provided in the experiment) in order to do the analysis. Therefore, the colors written by the subjects were narrowed down to 24. These colors are as following:

Black Gray White Red Orange Light Orange Dark Brown
Brown Light Brown Yellow Light Yellow Beige Olive Green
Green Forest Green Light Green Azure Blue Ultramarine Blue
Light Blue Purple Burgundy Pink Light Pink

Moreover, this paper mainly focuses on the analysis of the interior (bedroom) drawing, however for the sections that discuss both interior and exterior drawings, the exterior drawing's analysis only focuses on the façade and not the whole drawing since the main focus was the architecture and not the scenery.

2-3-2. Usage of Favorite Colors in the Drawings

In Figure 2-4, subjects' favorite colors can be observed. Additionally, in Table 2-2, it can be observed how the subjects used their favorite color in their interior.

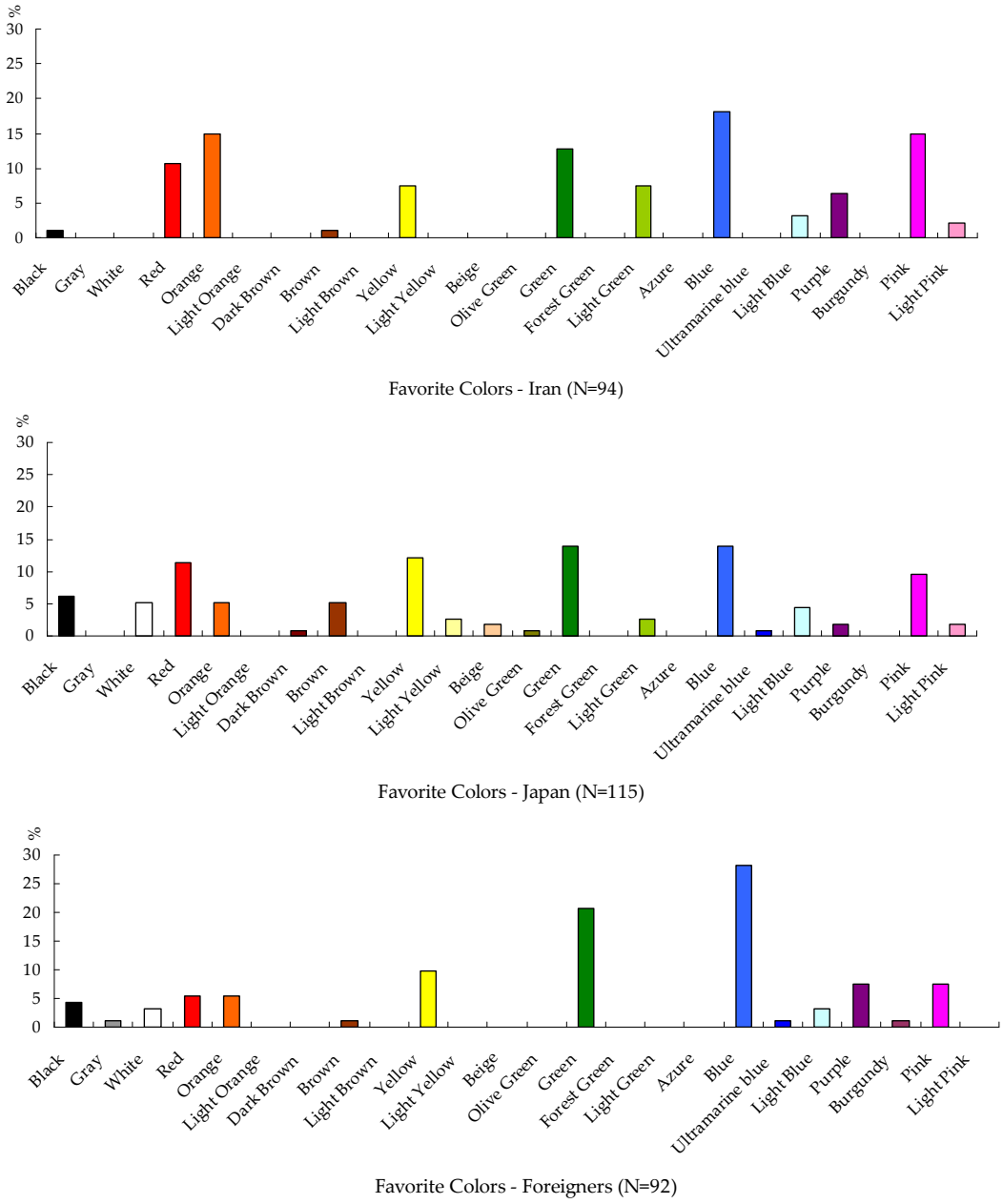


Figure 2-4. Color preference of the subjects

Table 2-2. Distribution of favorite colors in the drawings

	Same	Interior (Bedroom)					Exterior
		Wall	Bed	Door	Furniture	Smaller Objects	**Walls**
Iran (N=94)	100.0%	56.4%	38.3%	18.1%	16.0%	76.6%	76.6%
Japan (N=115)	97.4%	20.4%	31.9%	21.8%	22.7%	77.9%	88.5%
Foreigners (N=92)	96.8%	58.2%	35.2%	12.1%	20.9%	78.0%	90.1%

From Figure 2-4, it can be observed that blue is the most preferred color among the subjects, followed by green, pink, yellow, red, orange, purple, black and brown.

Additionally, from Table 2-2, it is observed that all of the Iranians, 97.4% of the Japanese and 96.8% of the foreigners have used their favorite colors in the drawings. One Japanese subject didn't use her favorite color (ultramarine blue) for the reason of not being suitable for architecture (interior or exterior). 3 foreigners didn't use their favorite colors: Gray (because the subject couldn't find the gray she was looking for in the color pencils, Black (not suitable), and Blue (her favorite color for clothes and not for architecture). In all the regions, the favorite colors were most used in the exterior drawing with foreigners having the highest percentage (90.11%). Following that, the favorite colors were used most in the smaller objects in the interior (such as table lamp, picture frames and flower vase). More than half of the Iranian and foreign respondents, have used their favorite color in the bedroom walls, whereas Japanese respondents only used 20.4% of their favorite colors in the bedroom walls. Furthermore, blue was the only color used in all the elements of drawings.

2-3-3. Regional and Color Varieties

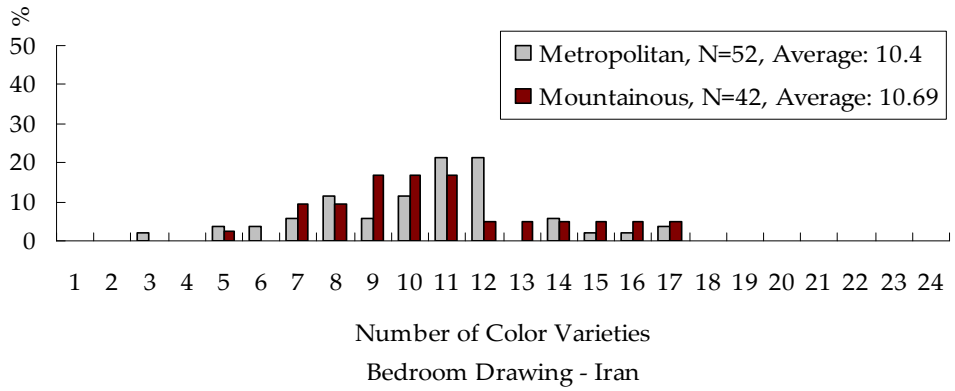
The respondents were asked to select the type of the place (in the city/town) they live in; being it Metropolitan, Coastal, Mountainous, or Others. As for the foreign subjects living in Japan, they were supposed to refer to the place(s) they have lived in before coming to Japan. The distribution for each region can be seen in Table 2-3. FR stands for foreigners.

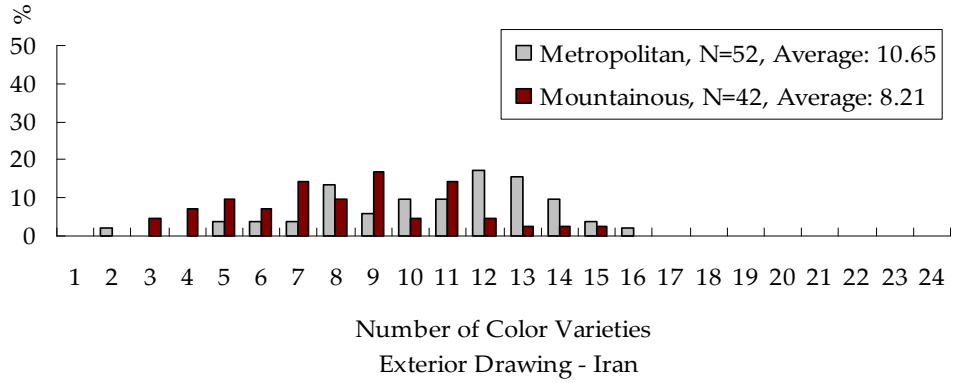
Table 2-3. Distribution of city types

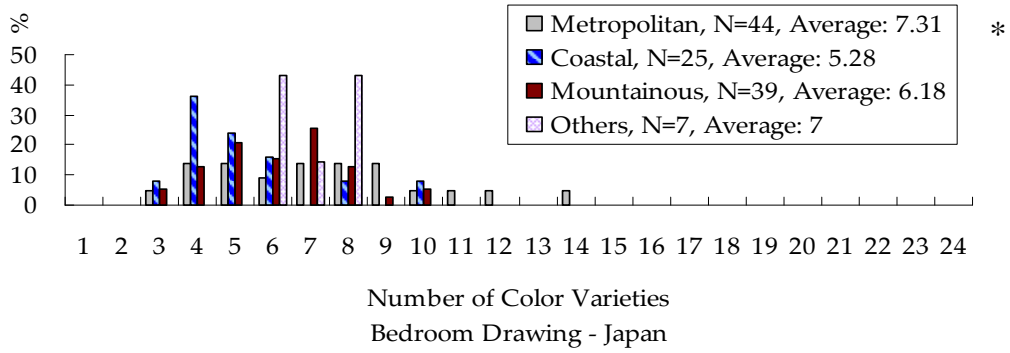
	Metropolitan	Coastal	Mountainous	Others
Iran (N=94)	55.3%	0.0%	44.7%	0.0%
Japan (N=115)	38.3%	21.7%	33.9%	6.1%
FR (N=92)	52.2%	35.9%	12.0%	0.0%

Figure 2-5 and Figure 2-6 show the number of color varieties used in the interior and exterior drawings in each region. In Japan, the subjects have used more number of color varieties in the exterior drawing compared to the interior drawing ($p<0.05$), although, this wasn't seen for Iranian and foreign respondents. In Iran, people living in metropolitan and mountainous areas have the same average of number of color varieties used in the interior drawing, while this average falls to 8.21 in the exterior drawing for people living in mountainous areas. In other words, people living in Iranian mountainous areas have used less number of color varieties in the exterior drawing compared to the interior. For Japanese and foreign respondents, people living in coastal areas had the lowest average of number of color varieties compared to the respondents living in other areas ($p<0.05$).

To give a more detailed description on the data analysis, it can be argued that in this analysis and results, the null hypothesis, which is assumed to be true until proven wrong, is that there really is no difference between average number of color varieties used by the subjects (subjects living in metropolitan, coastal, or mountainous areas). However, after doing the t-test, the null hypothesis is proven wrong and it is observed that there is a significant difference between the subjects; in other words subjects living in coastal areas used less number of color varieties compared to subjects living in metropolitan or mountainous areas. This is statistically proven by doing the t-test and Analysis of Variance.







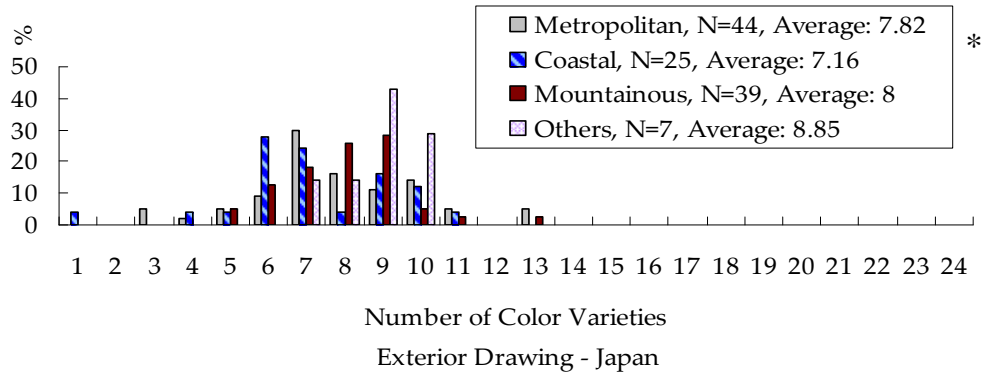


Figure 2-5. Number of color varieties used by Iranian and Japanese Subjects

*Note: * P<0.05*
*** P<0.01*

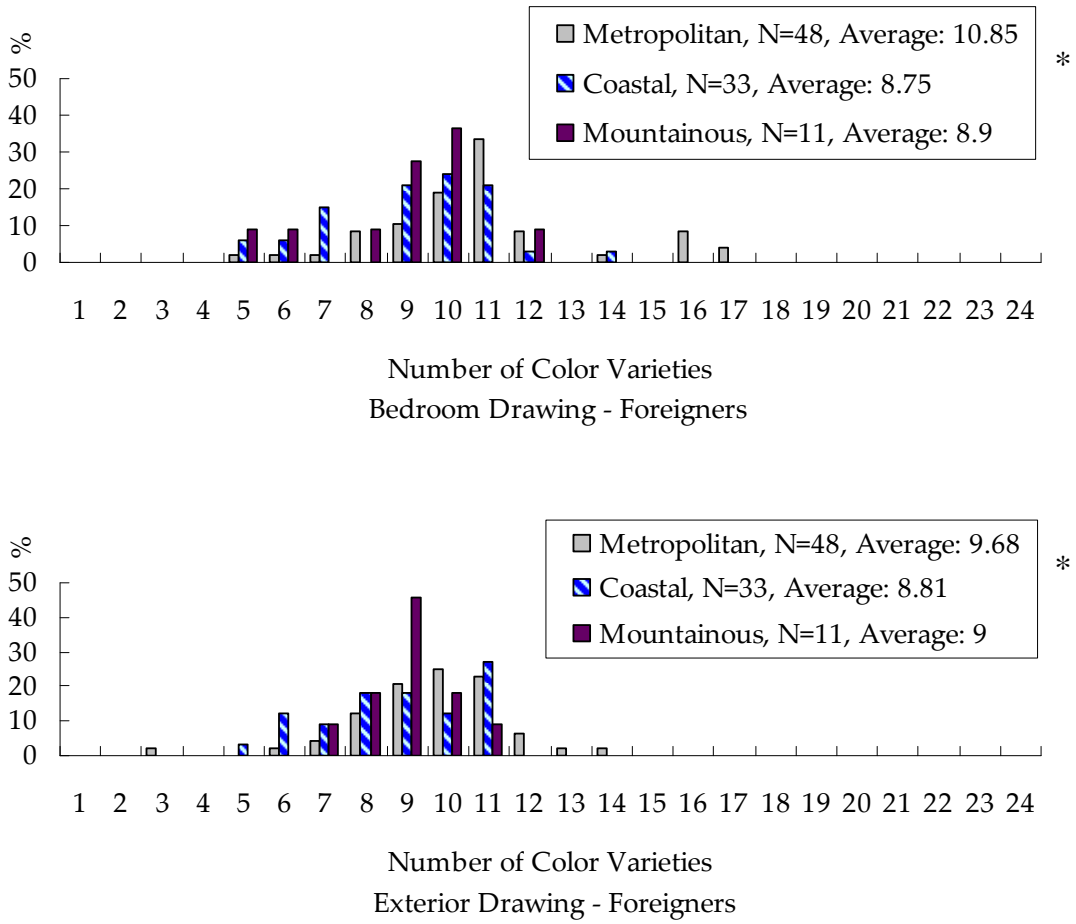
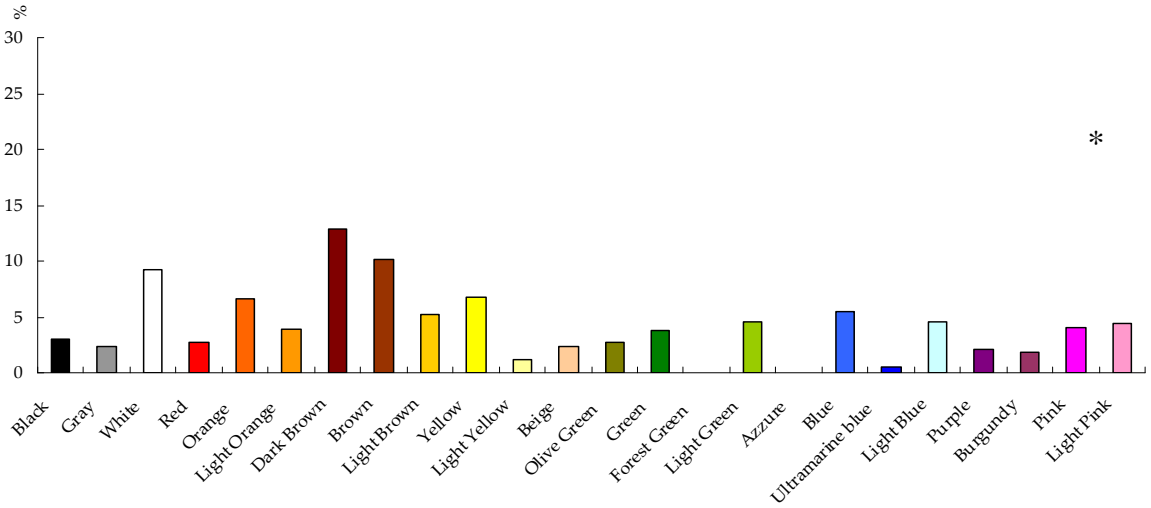
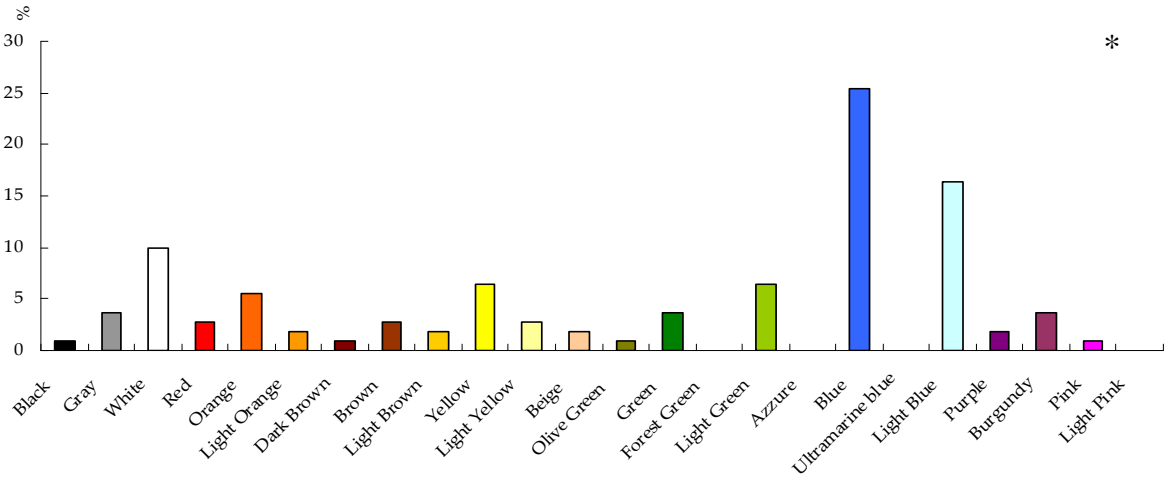


Figure 2-6. Number of color varieties used by foreign subjects

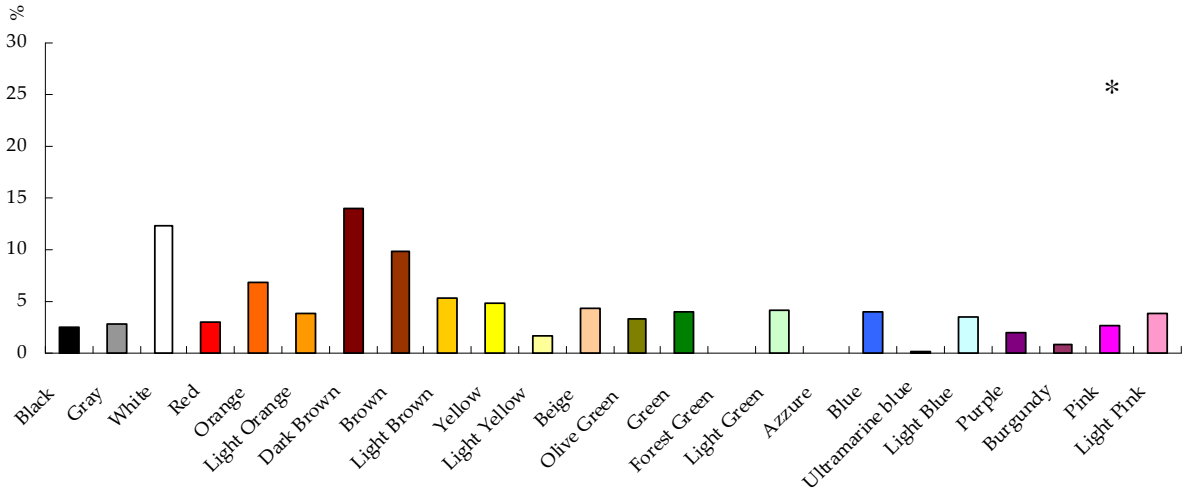
From Figure 2-5 and Figure 2-6, it was observed that people living in coastal areas had the least number of color varieties. Figure 2-7 indicate the colors used by the whole data (Iranians, Japanese and foreigners) in metropolitan, coastal and mountainous areas. It is concluded that people living in coastal areas have used more blue and light blue in their drawings compared to subjects living in other areas ($P<0.05$). However, there are no specific differences in colors used by people living in metropolitan and mountainous areas.



Metropolitan - Colors Used in the Bedroom Drawing (N=144)



Coastal - Colors used in the Bedroom Drawing (N=58)



Mountainous - Colors Used in the Bedroom Drawing (N=92)

Figure 2-7. Colors used in Metropolitan, Coastal and Mountainous regions

2-3-4. Residential and Color Varieties

The Purpose of this section was to see if there is any correlation between the colors of the house(s) the subjects have lived in with the colors they used in the drawings or not. They were asked for the colors of their bedroom and exterior walls. In case they have lived in multiple houses, they were to give the colors for all the houses. Those answers were later compared with the drawings. The results can be seen in Table 2-4.

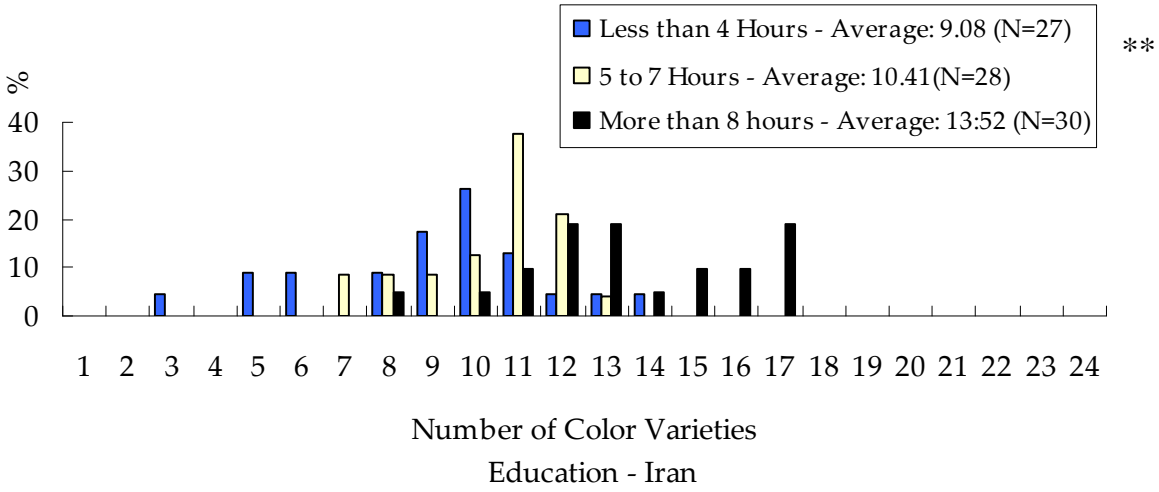
Table 2-4. Correlation between the subjects' own house and the drawings

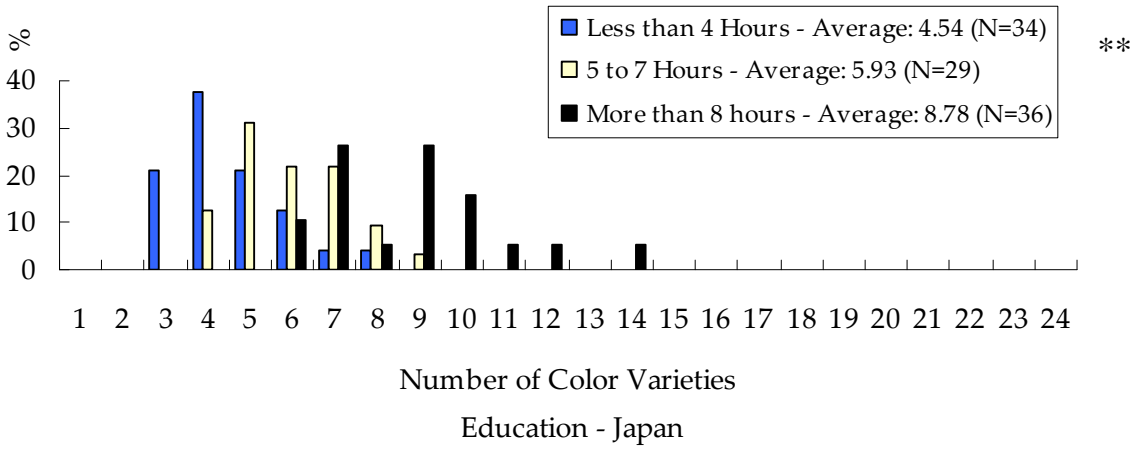
	Exterior		**Bedroom**	
	Same	Different	Same	Different
Iranians (N=94)	51.4%	48.6%	48.6%	51.4%
Japanese (N=115)	39.8%	60.2%	63.6%	36.4%
Foreigners (N=92)	56.9%	43.1%	52.6%	47.4%

As it can be seen from Table 2-4, Japanese subjects were more influenced by their bedroom wall colors rather than Iranian or foreigner subjects. Moreover, Japanese subjects were less influenced by their exterior wall colors. There wasn't a big difference between the Iranian and the foreign respondents regarding the influence of their own house.

2-3-5. Education and Number of Color Varieties

The respondents were asked to give the approximate hours of art classes they have had per week from kindergarten throughout high school. Figure 2-8 shows the number of color varieties that have been used in the bedroom drawing in each category according to the number of hours of art throughout their education (from kindergarten to high school), whereas Figure 2-9 focuses on the data as a whole (Iranian, Japanese and foreign subjects).





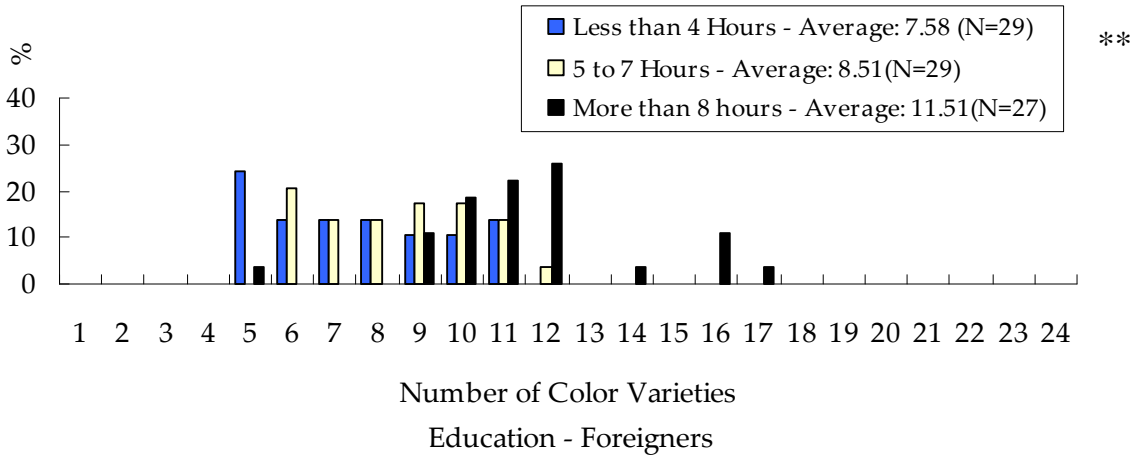


Figure 2-8. Number of color varieties and art class hours through school (From kindergarten to high school)

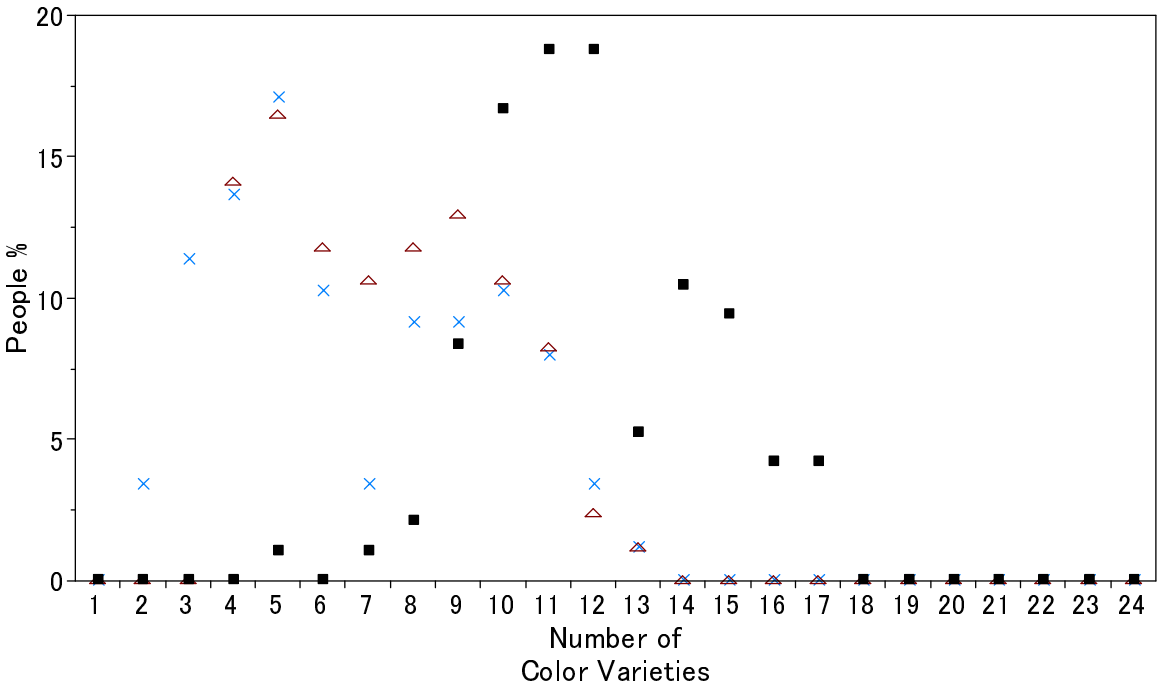


Figure 2-9. Education and number of color varieties for the data as a whole

By looking at Figure 2-8 and 2-9, it is observed that with more hours of art classes, more number of color varieties are used in the bedroom drawing in all the categories/regions ($P<0.01$).

Here, it needs to be mentioned that results from section "2-3-5" [Education and Number of Color Varieties] to section "2-3-7" [Respondents' Parents' Backgrounds and Number of Color Varieties] will only focus on the number of color varieties in the interior (bedroom) drawing. The same results were seen in the exterior drawing; therefore I did not see the need to include those results as well.

2-3-6. Major and Number of Color Varieties

As indicated earlier, there were a few personal questions; one of them being the

respondents' major. Figure 2-10 sums up the data as a whole, whereas Figure 2-11 shows the number of color varieties (in interior drawing) based on major in each category (region). It was concluded that in all the regions, the subjects who were art and design majored used more number of color varieties compared to those who weren't ($P<0.05$).

Additionally, I tried to have subjects from different majors. Subjects who were majoring in art and design were mainly studying in the following fields: painting, architecture, graphic design, constructive art, sculpture, calligraphy, visual design, and product design.

Moreover, subjects who were not an art and design student were majoring in the following subjects: Engineering, translation, business management, science, linguistics, accounting, industrial management, sociology, nanotechnology, robotics, anthropology, literature, psychology, information media, agriculture, economics, and international relations.

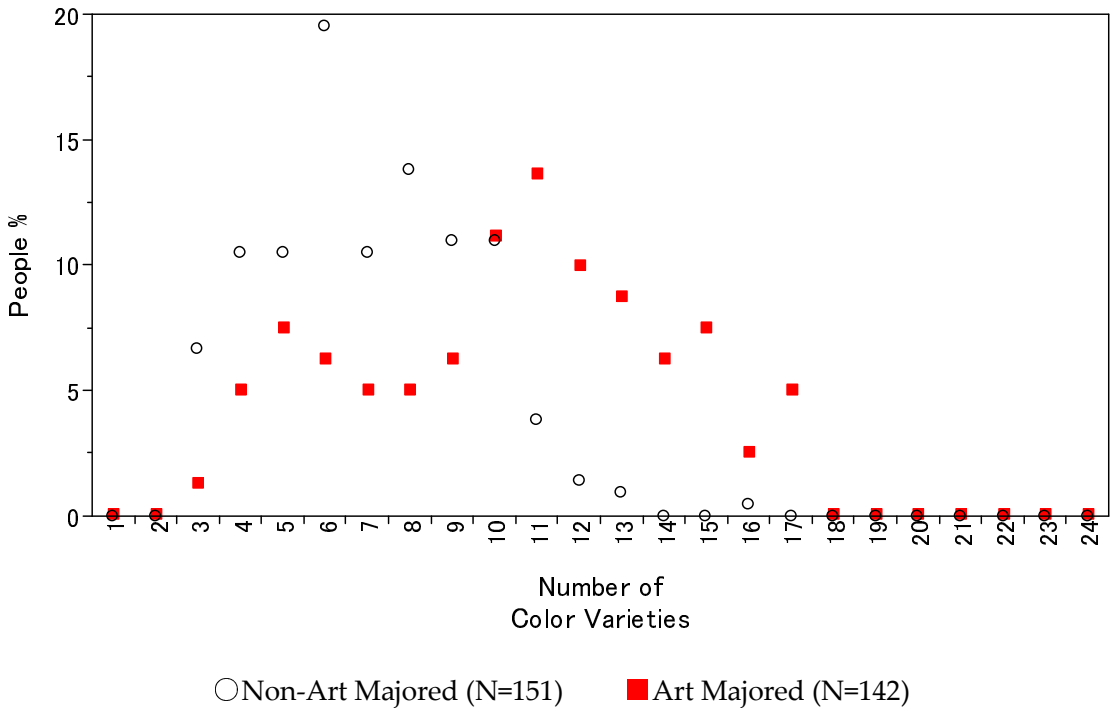
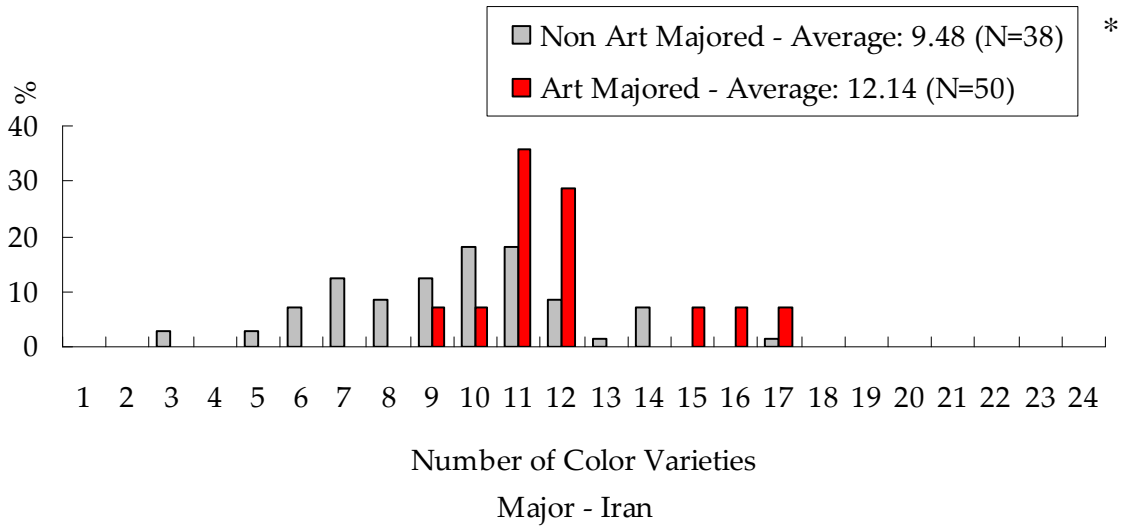
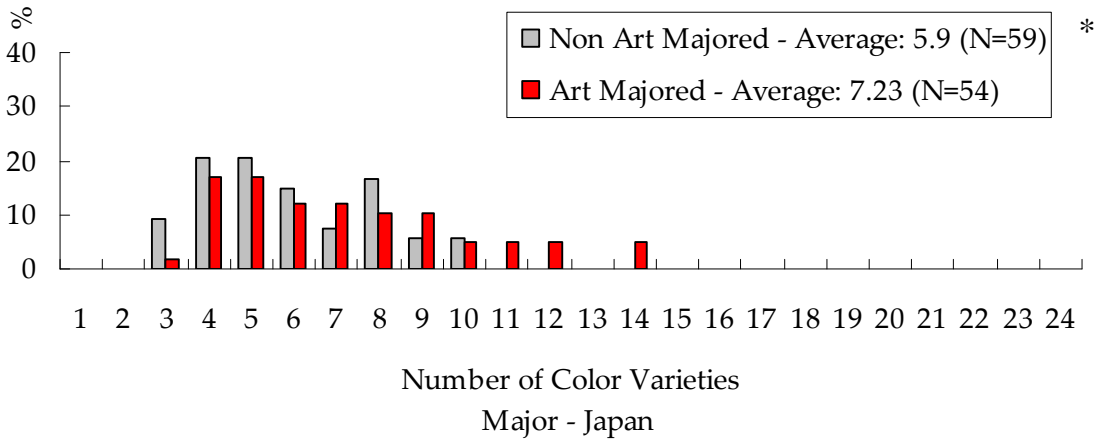


Figure 2-10. Number of color varieties based on major in all categories (regions)





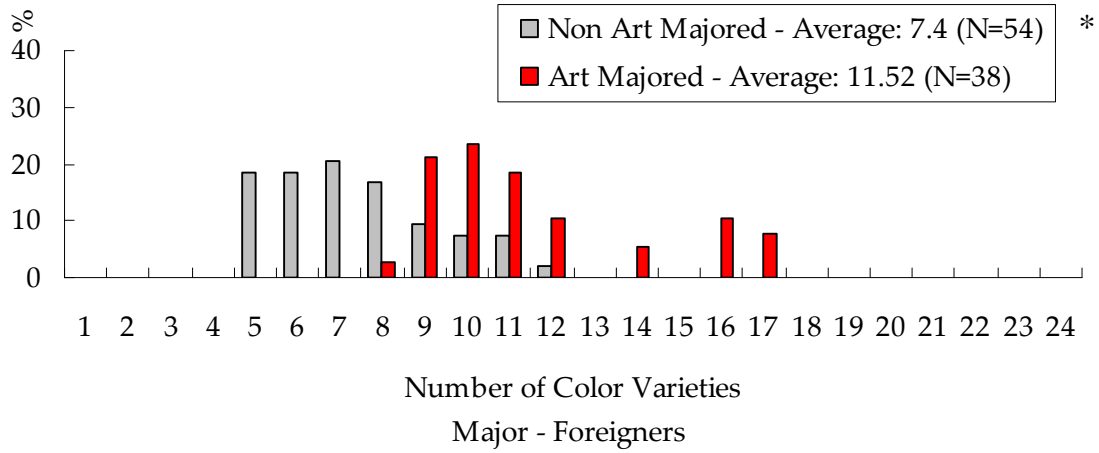


Figure 2-11. Major and number of color varieties in each category (region)

2-3-7. Respondents' Parents' Backgrounds and Number of Color Varieties

In this section, the respondents were asked if their parents have had any art or design background. Figure 2-12 indicates the data as a whole and it is noted that respondents with parents with art and design background have used more number of color varieties in the drawing. Moreover, Figure 2-13 shows the data for each region/category individually. It is observed that in all the regions, respondents whom had parents with art and/or design background had used more number of color varieties in their bedroom drawing in comparison with those who didn't ($P<0.05$).

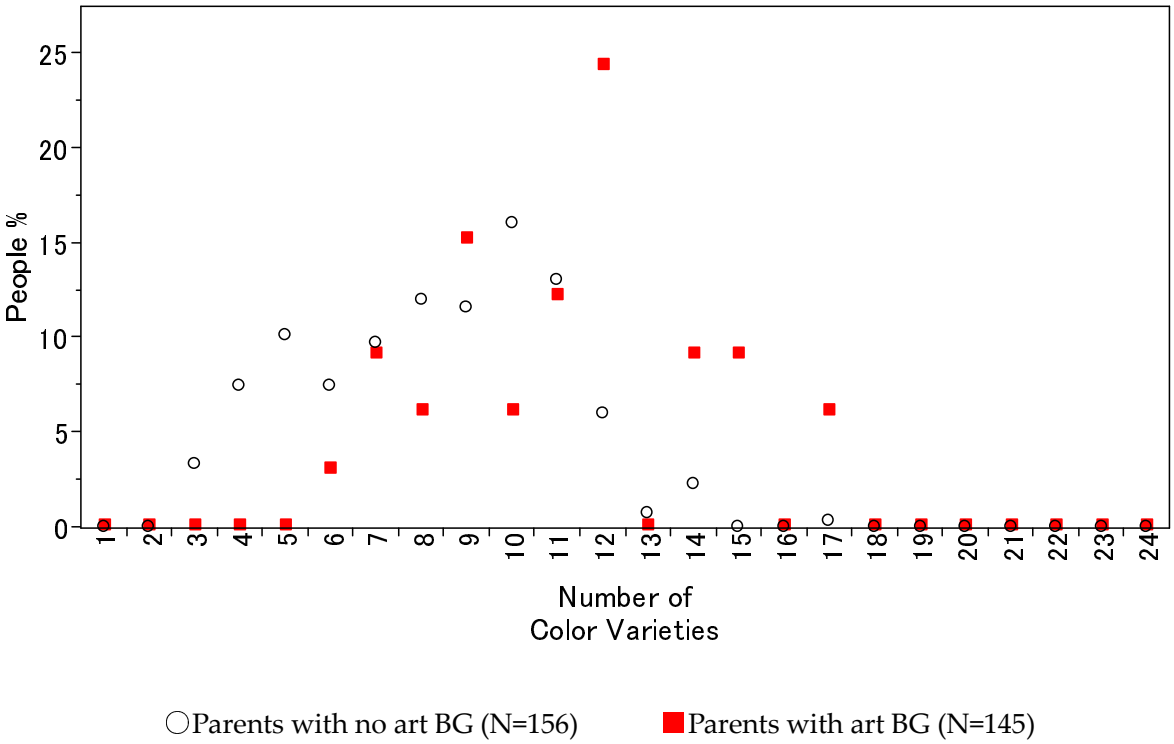


Figure 2-12. Number of color varieties and parents' background in the whole data

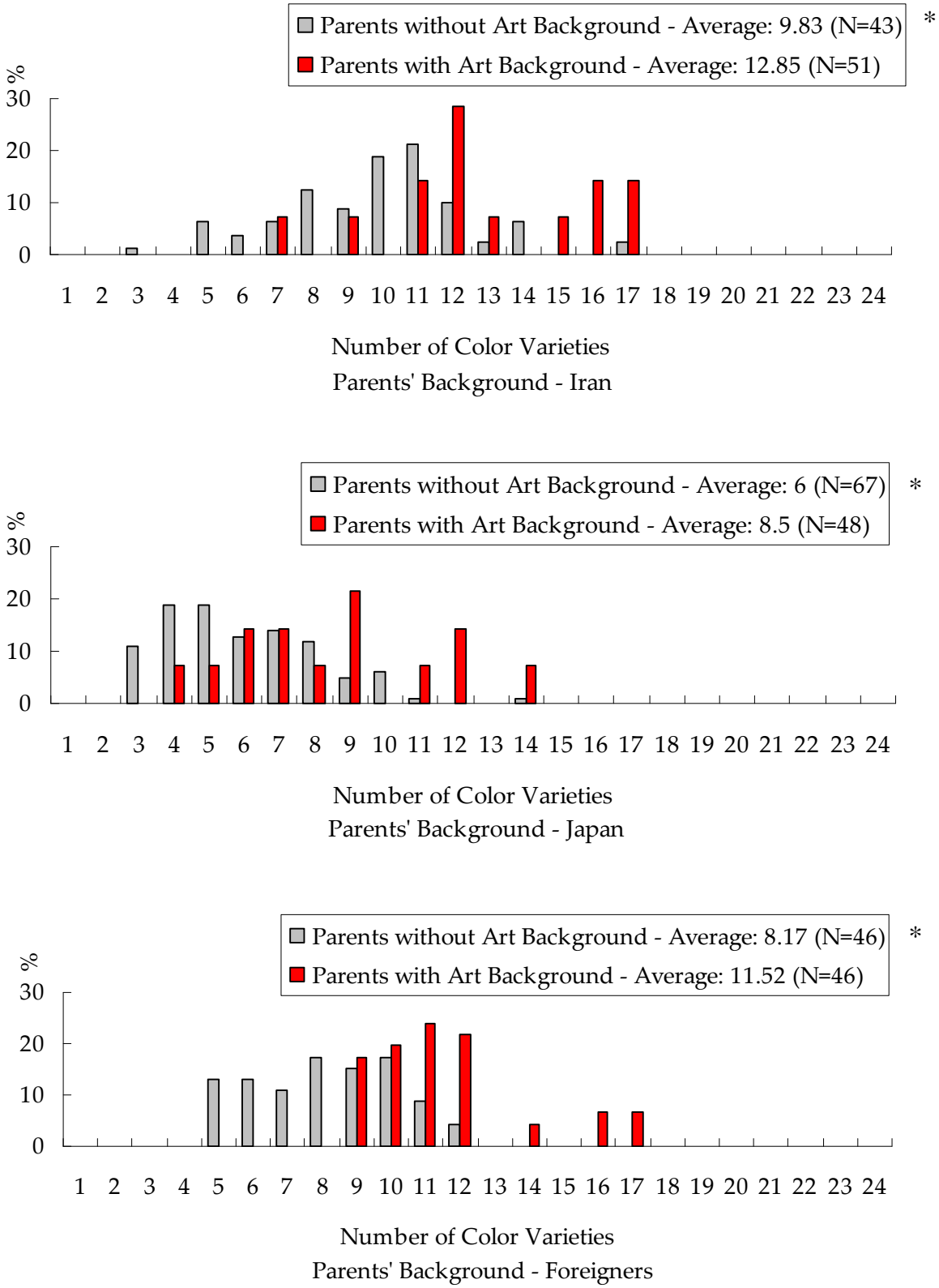


Figure 2-13. Number of color varieties and parents' background in each category

2-3-8. Exterior and Interior Drawings

This section discusses the number of color varieties used both in the interior (bedroom) drawing and the exterior drawing in all the regions (Figure 2-14). It is observed that in total, foreigners (including Iranians) used more number of color varieties compared to Japanese ($P<0.05$). Furthermore, Japanese subjects used more color varieties in the exterior drawing whereas Iranian and foreign respondents used more number of color varieties in the bedroom drawing rather than exterior ($P<0.05$).

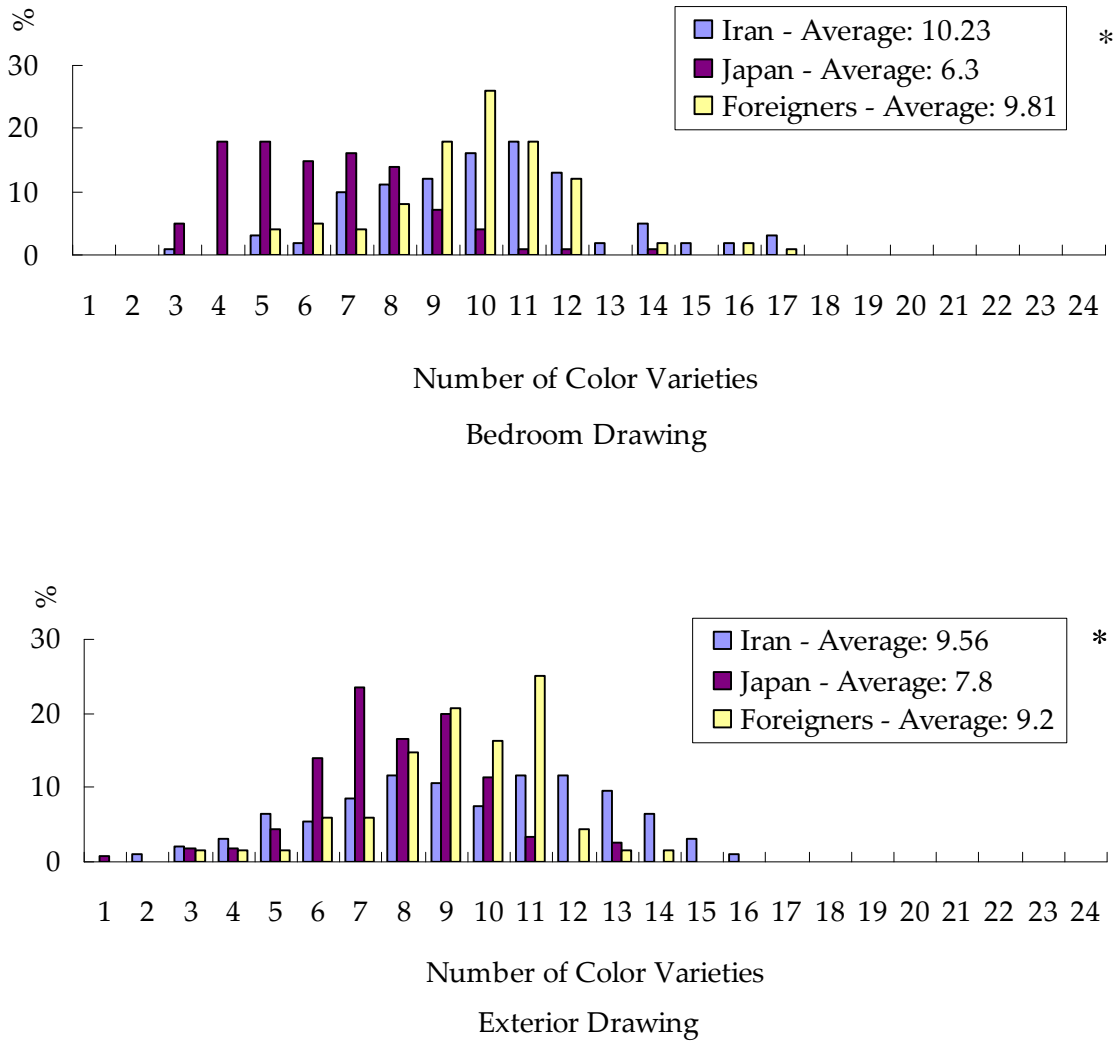


Figure 2-14. Number of color varieties in interior and exterior drawings

Here in Figure 2-15, we can see a few examples of how Iranian subjects painted their interior and exterior drawings.

Figure 2-15. Sample of Iranian subjects' drawing
The top drawings belong to a non-art-majored female, and the bottom drawings are from a male majoring in graphic design

Additionally, these are examples of how Japanese subjects did their drawings (Figure 2-16).

Figure 2-16. Examples of Japanese subjects' drawings
Top drawings are from a non-art-majored male student (with less than 8 hours of arts education at school), and bottom drawings are from an art-majored male student

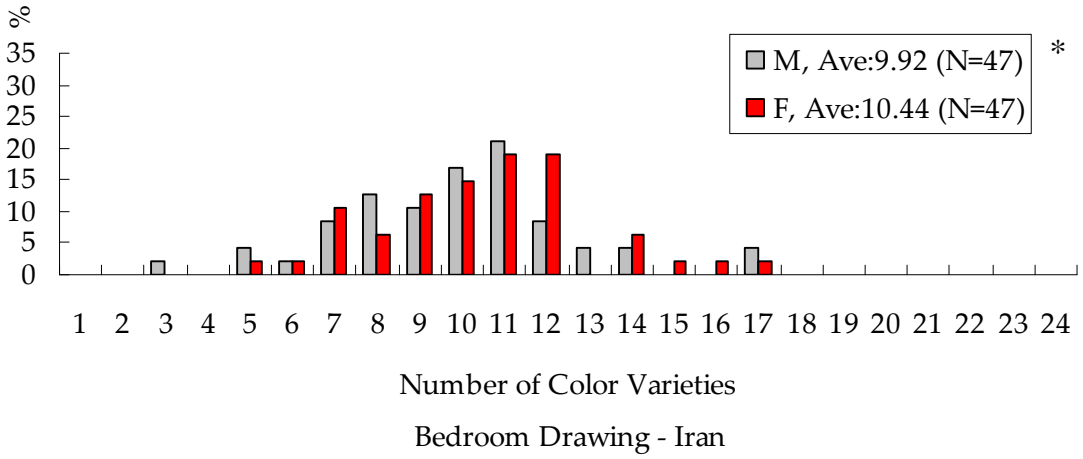
Lastly, in Figure 2-17, there are examples of how foreign subjects did their drawings.

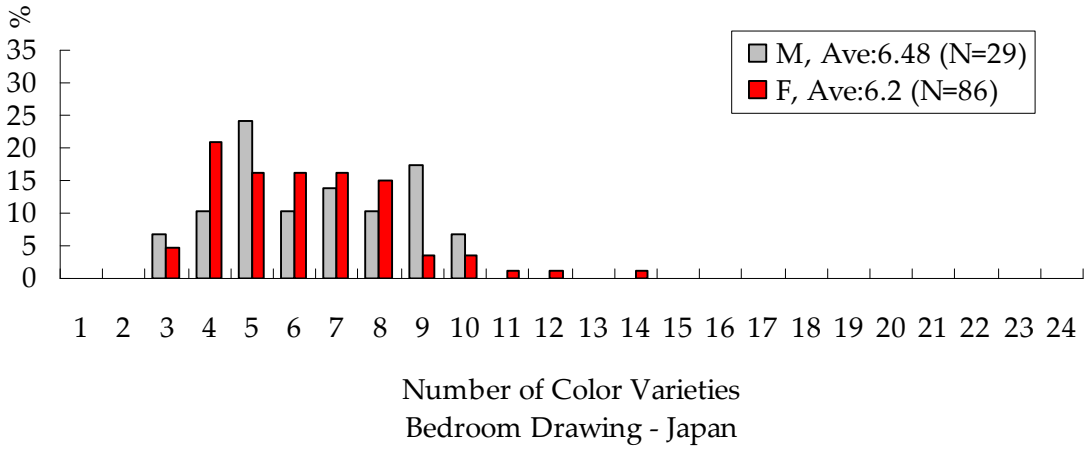
Figure 2-17. Sample of the drawings done by foreign subjects
None of these subjects are art or design majored, however, they both had more than 8 hours of arts education at school

Here it needs to be mentioned that although, it might appear that the interior drawing might have more elements (to color out) compared to the exterior drawing; however, as it can be observed from Figure 2-14, there is not a big difference between the average number of color varieties that the foreigners (including Iranians) have used for the interior and the exterior drawing. This implies that the subjects have used different colors in the façade of the exterior drawing as well. Additionally, subjects used different colors for the ceilings, the window sills or the door (Figure 2-15, Figure 2-16, Figure 2-17). Moreover, there were subjects whom even drew flowers under the window sills as well (Figure 2-17).

2-3-9. Gender and Number of Color Varieties

In this section, the number of color varieties used in the bedroom and exterior drawings by female and male subjects will be discussed. Figure 2-18 shows the results of bedroom drawing for each category (Iranians, Japanese and foreigners), whereas Figure 2-19 indicates the number of color varieties used in the exterior drawing. It is observed that foreign and Iranian female subjects used more number of color varieties in the bedroom drawing rather than the male subjects ($P<0.05$). However in Japan, male subjects used more number of color varieties in the bedroom drawing, although, this was not statistically significant. As for the exterior drawing, all the female subjects used more number of color varieties rather than the male subjects ($P<0.05$).





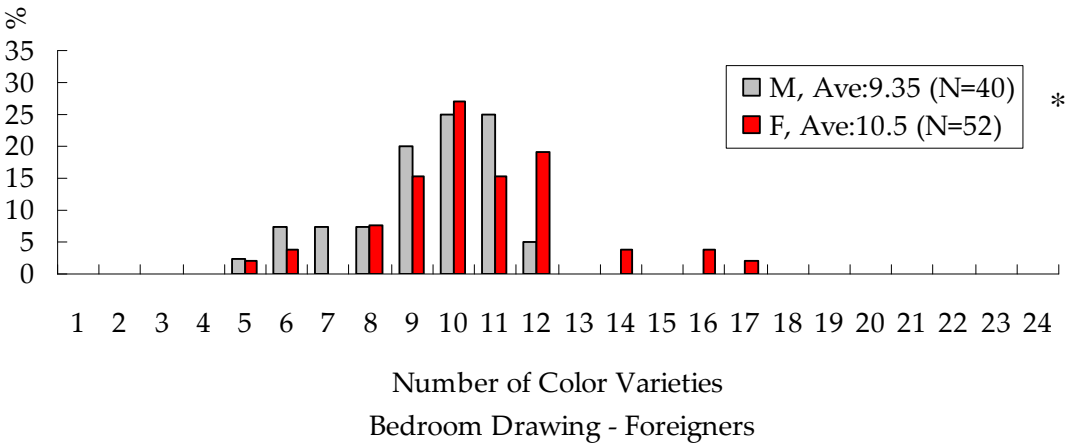
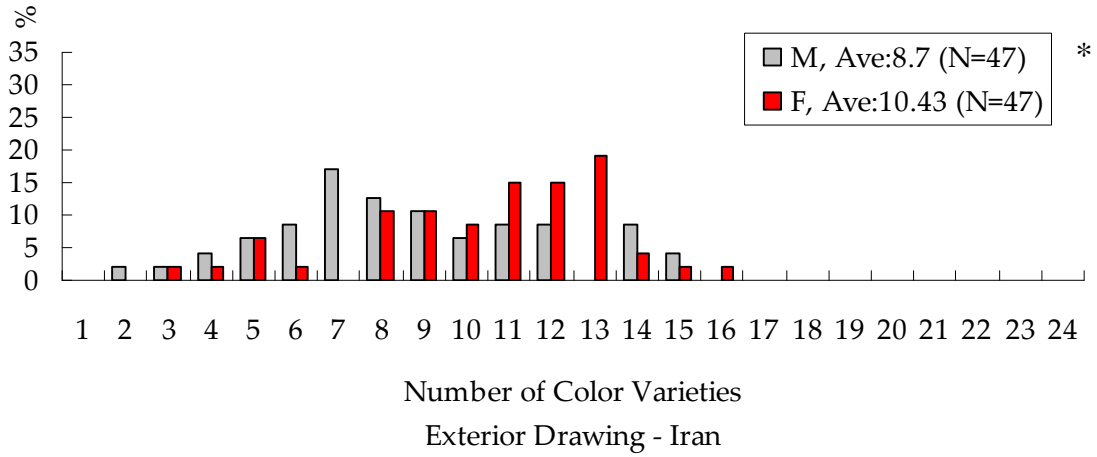
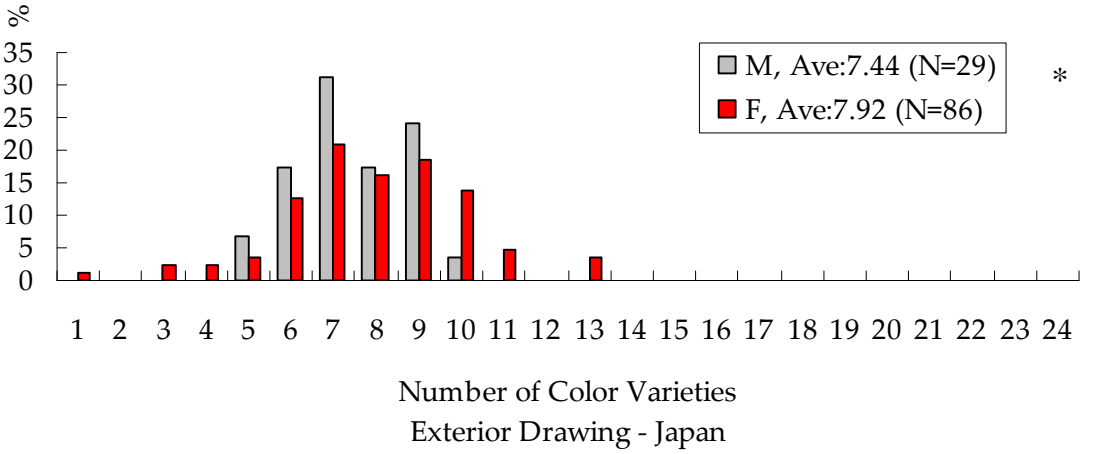


Figure 2-18. Number of color varieties in bedroom drawing and gender





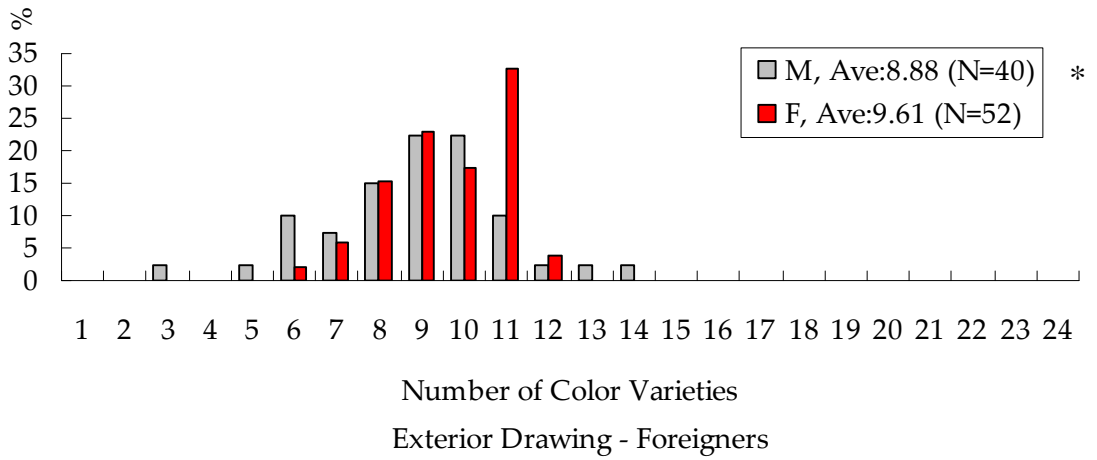


Figure 2-19. Number of color varieties in exterior drawing and gender

2-3-10. Patterns Used in the Walls

The reason for choosing drawings with color pencils was to see if the respondents will get creative in the drawings and use different patterns. Table 2-5 indicates that Iranians have used more patterns compared to the Japanese and foreign subjects (P<0.05). These patterns include: Striped, Mixed Shades, Flourish, and patterns using Curved Lines and Circles. Foreigners have used Starish Patterns too.

Table 2-5. Patterns used in the bedroom drawing **p<.05; **p<.01*

	Plain	Patterned*	Striped	Mixed Shades**	Flourish	Starish	Curved Lines	Circled
Iran	77	17	1	9	3	0	2	2
(N=94)	(81.9%)	(18.1%)	(1.1%)	(9.6%)	(3.2%)		(2.1%)	(2.1%)
Japan	108	7	0	5	1	0	1	0
(N=115)	(93.9%)	(6.1%)		(4.3%)	(0.9%)		(0.9%)	
Foreigners	85	7	0	0	3	2	0	2
(N=92)	(92.4%)	(7.6%)			(3.3%)	(2.2%)		(2.2%)

In Figure 2-20 and Figure 2-21, some of the examples of these patterns in the drawings can be seen

Figure 2-20. Examples of patterns used in the bedroom drawings

Figure 2-21. Examples of patterns used in the bedroom drawing

2-3-11. Overall Results

In this study, social environment was the primary focus and the influences of a person's residential, regional, educational and personal backgrounds were examined. It was observed that with more hours of art education, subjects used more number of color varieties. Therefore, it is indicated that among the case studies, education has a strong positive correlation with number of color varieties ($P<0.01$) (Table 2-6).

Table 2-6. Case studies and the data significance

	Residential	Regional	Educational	Personal Major	Personal Parents' BG
Iranians	-	*	**	*	*
Japanese	-	*	**	*	*
Foreigners	-	*	**	*	*

2-4. Discussion and Conclusions

In this paper, the influence of personal background on color preference was studied using a questionnaire and 2 drawings: bedroom drawing and exterior drawing. Since this was a cross cultural study, therefore, I tried to have the most international exterior drawing. Although, it can be assumed that with using another drawing, different results could have been obtained; however, since I observed the same results in all the categories (Iranians, Japanese and Foreigners) for all the case studies, therefore, it can be argued that I would have gotten the same results using another drawing too.

Moreover, to make sure the respondents don't look at the drawing just as a drawing; both the interior and the exterior drawings were as detailed as possible making them look real. Additionally, at the end of the questionnaire, there was a place where the subjects could write any comments they wanted. By looking at those comments, it was observed that 82.4% of the subjects did consider the drawings as their own house (and not just as a drawing). For example, they would use blue in the bedroom drawing and in the end, they

would write comments like: "I want my real life bedroom to be very relaxing, therefore I will use blue". As mentioned, this was seen in 82.4% of the subjects.

To discuss the results, it was concluded that in total, more than 96.77% have used their favorite colors in the drawings. The favorite colors that were seen in all the categories (Iranians, Foreigners, and Japanese) included: Black, Red, Orange, Yellow, Green, Blue, Light Blue, Purple, Pink, and Light Pink, while Blue was the only color used in all the elements of the Drawings. Grieve[2-29] and Maden et al.[2-30] argue that blue is the color most frequently chosen by adults. Ward[2-31] discusses that blue, red and green are the most popular colors. Similarly, Eysenck[2-32] concluded that blue is the most preferred color, followed by red, green and purple.

There was not much difference seen between the city types in regional section regarding number of color varieties, although, people who have been living in Coastal areas have used less number of color varieties compared to subjects living in metropolitan or mountainous areas. Looking at the results, it was observed that subjects living in coastal areas have used more blue hues in the drawings ($P<0.05$). George M. Michaels [2-33] argues that environment and social status have something to do with the development of preference for colors.

It was identified that education had a strong positive correlation with the number of color varieties ($P<0.01$). Furthermore, respondents whom were art and design majored had used more color varieties in their drawings ($P<0.05$). In addition, respondents whom had parents with art background had used more number of color varieties in their drawings compared to those who didn't ($P<0.05$). Crozier[2-34] argued that the differences in color preference are due to the fact that the human reactions to color are conditioned by learned experiences. It has been demonstrated that the evaluative responses to products are affected not only by professional training (design vs. non-design), but also by duration of the training (1st to 3rd year design students and lecturers in design) [2-35]. Moreover, Li-Chen Ou et al. [2-36] did a cross cultural comparison of color emotion among 223 observers from Britain, Taiwan, France, Germany, Spain, Sweden, Argentina and Iran, and found that effects of professional background (design vs. non-design) and age were strong on the

like/dislike response.

Additionally, it was observed that Iranian and foreign respondents have used more number of color varieties in the drawings compared to the Japanese respondents ($P<0.05$). Moreover, Iranians and foreigners used more varieties in the interior rather than the exterior drawing, while the contrary was seen for the Japanese subjects ($P<0.05$). Furthermore, Iranians had used more patterns in the bedroom wall drawings including striped, mixed shapes, flourish, curved lined, and circled ($P<0.05$).

Although, gender was not the main focus of this research, but the correlation between gender and number of color varieties was examined. It was observed that Iranian and foreign female subjects used more number of color varieties in the interior drawing compared to the male subjects ($P<0.05$). However, in the exterior drawing, all the female subjects used more number of color varieties rather than the male subjects. It can be said this is because female subjects paid more attention to the details compared to the male subjects.

Although, this study and its method has not been done before, but comparing some of the results with other studies confirm the reliability of these results.

This research was approved by the Research Ethics Committee of Faculty of Art and Design, University of Tsukuba, Japan before gathering the data.

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CHAPTER THREE

Creativity and Creative Education

3-1. Introduction

In chapter two, it was concluded that arts education has a positive significant correlation with color preference. Based on that, a new hypothesis was set as following: "specifically, creative education has influence on color preference". Therefore, in this chapter, the meanings of creativity and creative education will be defined.

Creativity can be defined as the production of novel thoughts, solutions, or products based on previous experiences and knowledge[3-1]. Jane Parker argues that "creativity and the significant role it should play within our system of education is currently a high profile issue. The potential impact on pupils is clear; creativity prepares pupils for life and improves esteem, motivation, and achievement".[3-2]

Unfortunately, the impact of creativity on the process of learning is often ignored in school systems and more specifically in college classrooms. Creativity is only recognized when it is seen through an extreme example (for example a student who is gifted in writing poetry). However, in this chapter, we will learn that creativity can be learned, and teachers and educational system play an important role in this part.

Creative and responsible teachers are consistently revising and updating their materials and teaching methods. Creative teachers model self-confidence through taking risks, having faith in themselves and their students, accepting difference and diversity, being flexible, and being passionate and joyful eternal learner. When teachers are capable of modeling these qualities, their students learn that it is acceptable to take risks and make mistakes.[3-3,3-4,3-5,3-6,3-7]

M. G. Hickey states that "the dynamic process of creative teaching is characterized by high energy, motivation, and commitment to a career. It encourages students' creative abilities, individuality and independence, and provides a safe climate where students can risk and push boundaries. It is characterized by regular feedback, encourages an environment of curiosity, models flexibility, and views fostering creativity as a precursor to fostering creativity in students".[3-3]

In this chapter, aside from creativity and creative education, the role of teachers in

raising creative students, methods of creative teaching, and arts creative education will additionally be discussed.

3-2. Defining Creativity

Creativity is like all brain-based functions, ethereal and elusive. This explains why creativity is difficult to define and why definitions may vary according to researcher's assumptions about the concept of creativity as it relates to the personal, the process, and the outcomes that are taken into consideration. In his book, *Creativity – Theory, History, Practice*, Pope[3-8] attempts to define the concept of creativity by writing about all the aspects captured in his sentence "Creativity is extra ordinary, original, and fitting, full-filling, in(ter)ventive, cooperative, un/conscious, female, recreation" (p.52). Saebo et al. state that "he is clearly not looking for one definition that captures it all, but is trying to unlock the concept of creativity by looking at it from many different angles".[3-9]

Moreover, Isaksen et al. argue that "creativity is an important element in relation to educational and societal growth. As the degree of complexity and the amount of information in our society continue to increase, society's problems require more creative solutions. For this reason, all sectors of society are requiring leaders who can think critically and creatively".[3-10] Although, Carter states that "this important construct has not been universally defined, defining creativity as "the production of novel thoughts, solutions, or products based on previous experience and knowledge" (Gandini cited in Carter, 1992, p. 38) seems to capture the essence of creativity".[3-1]

Fisher[3-11] states that "the process of creative evolution is consisted of generation, variation and originality. To create is to generate something, to be productive in thought, word or deed. But generation is not enough. Variation and differentiation are needed. Creativity does not repeat itself; it always contains something original and new. He later lists the characteristics of creative people: they are flexible, connect ideas, are unorthodox, show aesthetic taste, are curious and inquisitive, see similarities and differences and they question accepted ways of doing things (p. 13). He also claims that many creative

breakthroughs occur through intuitive insight, when a problem is intuitively seen in a new way or from a fresh viewpoint".[3-11]

Csikszentmihalyi, who has conducted several longitudinal studies into the nature of creativity, believes that "creative individuals are boundary crossers and see relationships between different things that none of the rest of us can see (as cited in Pink, 2005)".[3-9] Attempts to analyze and define creativity typically identified four primary functions: fluency, flexibility, originality (or novelty), and openness (or playfulness) [3-12,3-13,3-14].

Lucas[3-15] proposes the following definition:

> *Creativity is a state of mind in which all of our intelligences are working together. It involves seeing, thinking and innovating. Although, it is often found in the Creative arts, creativity can be demonstrated in any subject at school or in any aspect of life.*

Fabun[3-16] suggests that the following steps are followed by each individual who is successfully creative:

1. Desire – wanting to create something original;

2. Preparation – the collection of materials, ideas from pertinent and seemingly unlikely sources;

3. Manipulation – playing around – the collected materials are looked at from innumerable perspectives;

4. Incubation – frequently the problem is set aside while others are pursued;

5. Intimation – a feeling of premonition that solution is near;

6. Illumination – the solution is revealed (it is this moment that is sometimes called the "Eureka" moment); and

7. Verification – the idea is examined and valued to if it works. (Fabun[3-16], 1968, p. 9-12)

Of course, not every step is necessary for every creative act, but the moment of truth is near the end of the process and comes from preparation, desire, intimacy with the problem and process, and faith in its completion[3-12,3-16].

Perkins (1981, pp. 130-218)[3-17] proposes the following strategies are more consistent with creative behavior and could be followed if one sought to be more creative:

1) Try to be original
2) Converge on the problem gradually
3) Strive for objectivity
4) Search only as necessary and prudent
5) Try, but don't expect to be correct the first time
6) Use your own judgment and experience
7) When stuck, change the problem
8) Use concrete visual representations of ideas (drawings, note-books)
9) Focus and practice within the context of the problem
10) Criticize, evaluate, and revise your behavior

Here, let's mention that during the past fifty years, interest in creativity research has grown epidemically. Results from these studies[3-18,3-19,3-20,3-21,3-22,3-23,3-24,3-25] suggest "common themes profiling intellectual capacities, personality characteristics, social arrangements, creative agendas, struggles, and accomplishments of unique individuals".

Csikszentmihalyi states that "one overarching theme suggests creativity as being inextricably situated within the field of endeavor. The creative process and person are filtered by the domain and by the field. Therefore, the shape and function of creative products and processes depend in part on the gatekeepers of the field and in part on how a particular society supports or rejects the creativity in question".[3-4]

Additionally, Sternberg et al. state that "another overarching theme suggests cognitive characteristics of a creative person involves metaphoric thinking, flexibility, and skill in decision making, independence in judgment, coping well with novelty, logical thinking skills, visualization, problem-finding, escaping entrenchment and finding order in chaos".[3-24,3-26] Furthermore, Starko states that "personality characteristics include the willingness to take risks, perseverance, drive, commitment to task, curiosity, openness to experience, tolerance for ambiguity, broad interests, valuing originality, intuition and deep emotions, and being internally occupied".[3-27] Gardner further states that "what may

distinguish creative individuals is their way of productively using the insights, feelings, and experiences of childhood".[3-28]

In addition, Wallas states that "a third overarching theme represents the characteristics of the creative process and includes preparation, incubation, illumination, and verification".[3-29] Taylor argues that "this part of the process hinges on a creator's imagination, inspiration, association, and problem solving".[3-25] Csikszentmihalyi further states that "the person's process then, hinges on the acceptance, or recognition by the field as verification of novelty and importance".[3-4]

Having defined creativity, next, creative education, creative teachers, and their impact on creativity will be discussed.

3-3. Creative Education

3-3-1. Creativity in Education

The focus on creativity in education is by no means a recent innovation. Research on creativity has, according to Jeffrey and Craft (2001, p.2)[3-30], "developed in four themes from the 1950's to the present, each with its own distinctive focus. In the 1950's, the focus was on the individual, on genius and giftedness, and on the personality of the person who creates. As a result of this tend, the focus in the 1960's concentrated on measurable outcome and tests of creative ability related to cognition".

Saebo et al. state that "in the 1970's, the emphasis shifted to connecting creativity with imaginativeness and the need to stimulate creativity. Finally, during the 1980's researchers looked toward environmental conditioning and social theory, to understand the concept of creativity. Following this fourth line of reasoning, researchers began to focus more on the creativity of ordinary people within the education system. At the same time, the methodology for investigating creativity in education shifted from positivist, large-scale studies aiming to measure creativity, towards ethnographic, qualitative approaches to

researching creativity in practice".[3-9]

The concept of creativity in education today is becoming universalized. In terms of education, creativity is an essential element necessary for learning. Starko[3-27] suggests that "learning is a creative process that involves students making information relevant by linking prior knowledge and new knowledge in an individually meaningful format". [3-27] "Unfortunately, despite the fact that policymakers and researchers have increasingly recognized the importance of creativity in education during the past 20 years, the concept of creativity is often neglected in schools' curricula and practice" (Craft and Jeffrey 2008; Kaufman and Sternberg 2007; Steers 2009)[3-31,3-32,3-33]. School environments either do not support creative expression, or actively suppress it.

Steers states that "creative pupils need creative teachers, but conditions of the educational system severely limit the scope for individual teachers to take creative risks".[3-33] Torrance and Safter (1986), for instance, assert that "teachers are often ill equipped to develop, support, or evaluate creativity in their students".[3-34] In addition, "much theory and research shows that creative students often lose their creative potential" (Shaughnessy, 1991) [3-35].

Amabile and Collins[3-36,3-37,3-38] also report that "students' creativity has been found to suffer from the traditional teaching practices of evaluation, reward, competition, and lack of student choice. Interestingly, educational environments encouraging autonomy and self-directed learning actually foster creativity".

The characteristics of creative environments have been identified as provide[3-16]:

1) Sufficient resources to provide time and opportunity
2) A free flowing communications exchange between individuals
3) A reward system that socially or economically rewards the creator
4) Privacy and non-interrupted time to be alone to think and produce
5) A climate of acceptance and nurture
6) Opportunities to form groups of common interest
7) Education that rewards and encourages free inquiry as opposed to imparting known information or values (Fabun, 1968, p.26)[3-16].

Moreover, Scott, Leritz, and Mumford[3-39] identified 156 studies that had examined the effects of creativity training with respect to divergent thinking, problem solving, performance, and attitude/behavior criteria. They found out that creativity training had noteworthy effects, not only on divergent thinking but also problem solving, performance, and attitude/behavior criteria.[3-39,3-40,3-41]

Therefore, the challenge for schools and social institutions is to shift the focus of education onto the development of a population that is capable of thinking and taking new initiatives, not merely repeating what past generations have done. They must be equipped for a world of challenge and change (Fisher, 2004, p.11)[3-11]. Saebo et al. state that "creativity is essential if new ways are to be found for solving problems. At the same time, creative activity is capable of rewarding the involved person on an emotional level. It offers the spontaneous pleasures of play, self-expression and satisfaction".[3-9]

To sum it up, "although, some people are more creative by nature than others in a specific domain, creative skills can be learned and therefore improved" (de Bono 1992; Prummel 2006)[3-42,3-43]. "Thus creativity should form a vital and integral part of every child's school experiences, and contribute to improved learning and increased standards across the school as a whole" (Clarke 2003, in Steers 2009)[3-33,3-44]. "A child will remain frequently creative and adapt itself to the changing world if its creativity is stimulated. Hence it prospers best in a safe and stimulating climate" (Steers 2009; Prummel 2006)[3-33,3-43]. "Teachers, among others, can also encourage pupils to act and think creatively as well as to stimulate creative behavior when it appears" (Kaufman and Sternberg 2007)[3-32].

3-3-2. Teaching Creativity

According to Bateson[3-45], "everyday creativity plays an essential role in education because learning and adaptation in adult life depend on discovery and new construction. Creative teachers help students to discover, and reconstruct by rediscovery making them capable of production and creativity and not simply repetition".[3-46] Jane Parker mentions "a study by Sternberg, Ferrari, Clinkenbeard and Grigorenko, where they found that students

taught in a way that matched their abilities (particularly in terms of creative students) achieved higher level than those whose teaching was poorly matched".[3-2]

Lucas argues that "teaching the students how to learn effectively should be the essential kernel in every teacher's pedagogy, and the teacher needs above all to have respect for the individual learner".[3-15] "Creative teachers are often energetic, supportive, knowledgeable, and somewhat eccentric. Their classroom environments are often brightly colored, cleverly designed, comfortable, and welcoming. Within these classrooms, students are often cooperative, friendly, excited, and interested". [3-3,3-27,3-47,3-48]

Both Saebo et al. and Lucas argue that "educational documents make claims for creativity in education and give several reasons for implementing creative teaching and creative learning in schools. Nevertheless, apart from some creative administrators and teachers, most schools retain too many features which are fundamentally uncreative".[3-9,3-15] The challenge for the teacher, says Joubert (2001)[3-49], is that "creative teaching is an art and it is not possible to teach teachers didactically how to be creative; there are no fail-safe recipes or routines. But some strategies can help teachers to promote creative thinking".

The British NACCCE[3-50] report *All our Futures* (1999) distinguishes between teaching creatively and teaching for creativity. Teaching creatively occurs when teachers use imaginative approaches to make learning more interesting, exciting and effective, while teaching for creativity takes place when forms of teaching that are intended to develop young people's own creative thinking and behavior are introduced (p. 89). Creative teaching is regarded as a key component in all good teaching, but it does not guarantee that the children are developing their own creative potential. Teaching creativity goes a step further by also developing the creative abilities of the children. Nevertheless, teaching creativity is not possible without creative teaching. In teaching, there are always new challenges and creative teachers manage them extraordinary well, because they constantly reinvent themselves and adapt their teaching styles and strategies to different situations as required (p. 95). [3-50]

Shaughnessy (1991) recommends an educational climate consisting of communication, consensus, consistency, clarity, coherence, consideration, community, cohesiveness,

commitment, concern, care, and cooperation[3-35]. Research has shown that environments that encourage independence, risk-taking, and intrinsic motivation have been found most conducive to creativity[3-35,3-51,3-52,3-53]. "In creating this type of environment, it is recommended that teachers accept and encourage creative thinking, tolerate dissent, encourage students to trust their own judgments, emphasize that everyone is capable of creativity, and serve as a stimulus for creative thinking through brainstorming and modeling".[3-54,3-55]

The teacher should be respectful, rather than dismissive; should encourage active (not passive) learning; should support the individual's interest, rather than the standardized curriculum; should pose questions, not statements; should be surprising rather than predictable; should offer many patterns rather than a standardized model; should "move" the classroom to varied environments; should recognize multiple intelligences; should include visual representations as well as auditory ones; and finally, should be able to stimulate social as well as private learning. [3-15]

Creative and responsible teachers are consistently revising and updating their materials and teaching methods. Creative teachers model self-confidence through taking risks, having faith in themselves and their students, accepting difference and diversity, being flexible, and being passionate and joyful eternal learner. When teachers are capable of modeling these qualities, their students learn that it is acceptable to take risks and make mistakes. [3-3,3-4,3-5,3-6,3-7]

Lilly et al. state that "the observation of teachers in creative action provides evidence of personality characteristics similar to those of the creative giants: curiosity, originality, independence, risk taking, energetic, sense of humor, complexity seeking, artistic, open-minded, privacy seeking, and intuitive".[3-5] In addition, Hickey[3-3] argues that "creative teachers encourage students' creative abilities such as individuality and independence, and provide safe climates wherein the students can take risks and push boundaries. Further, these teachers provide regular positive feedback, encourage an environment of curiosity, model flexibility, and view fostering their own creativity as a precursor to fostering the creativity in their students". [3-3]

Lilly et al. further state that "these creative characteristics prove to be especially helpful to teachers who introduce the inquiry methods of research and discovery learning into their classrooms, who strive to improve their practice, and acquire new teaching strategies on their own initiative".[3-5]

Furthermore, it needs to be added that, Lucas (2001)[3-15] is "critical of the assumption that creativity cannot be learned (p. 38). He outlines four key conditions for teaching creativity and creative learning, which are particularly relevant in the school context:

- *The need to be challenged* – both by having goals set for us and by being helped to set our own – in a supporting and demanding atmosphere.
- *The elimination of negative stress*. If the brain is over-stressed, it ceases to operate at a higher level and our most primitive survival instincts take over and dominate.
- *Feedback*. We need skilled feedback to learn to distinguish what is quite good from what is stunningly brilliant, which approaches that work better than others and to develop internal feedback reflection.
- *The capacity to live with uncertainty*. Teachers who are seeking to encourage creativity cannot expect to have all the answers, but they can offer robust and workable alternative structures and processes to their pupils, which can be developed and personalized (p. 39)".[3-15]

Having mentioned those, lastly, some methods of creative teaching that creative teachers use in order to raise creative students will be discussed as following.

Teacher-Student Relationship

Endo et al. and Pascarella argue that "several articles, reports, and books investigate methods of teaching creativity in the classroom, but few focus on the importance of building teacher-student relationships in a creative environment".[3-56,3-57] Morganett[3-58] states that "quality teacher-student relationships can encourage students to be active learners in the classroom which will foster creativity". Furthermore, "creativity can be fostered by

positive teacher-student relationships", as suggested by Carter[3-59]. Additionally, many other researchers[3-57,3-60,3-61,3-62,3-63] have reported that "teacher-student relationships are extremely important to college student development regardless of the classroom context".

Lilly et al. argue that "making connections is a process that teachers and students learn together. Connecting with students involves an attitude and ability to be embracing, trusting, and allowing oneself to be vulnerable. The connection process involves intuition, intimacy, and challenge; it's emotional and real and begins with the teacher and her willingness and ability to devote a great deal of physical, emotional, intellectual, and psychological energy to the task. In order to connect to, inspire, and form a bond and relationship with each student, a teacher must maintain a high level of commitment and dedication".[3-5]

Morganett[3-64] provides "five examples of personal experiences, which can be used to enhance the teacher-student relationship in the classroom, especially in a creative environment. First, at the beginning or end of class, ask students about current events, magazine or newspaper articles, or personal events that could be tied into the class discussion. Second, use work time during class to talk with students individually about their assignment or even personal matters".[3-64] Morganett further suggests that "giving at least one positive comment during the interaction will promote positive teacher-student relations. Third, take the opportunity to wish the class or individual students a good week (at the beginning of the week) or a good weekend (at the end). Fourth, take advantage of any irregulars in the time schedule to talk with students about their interests and activities, while sharing some of yours. Fifth, use discussions or short presentations for students to talk about topics decided by the class, hobbies, or other interesting experiences and life goals".[3-64]

Additionally, Cole et al.[3-65] argue that "a teacher should establish a comfortable and personal environment in which he communicates respect and caring for students individually. One reason for this emphasis on personal relationships stems from the professor's belief in the power of teacher-student relationships in enhancing creativity. In conveying this respect, the teacher can use effective methods such as learning each

student's name, listening attentively, and making himself accessible. The teacher should also provide feedback by assuming the role of the audience, which implies a non-judgmental attitude and emphasizes active listening, followed by constructive feedback. By doing this, the teacher is being supportive, and accessible, and will also be challenging the students' thinking". [3-65]

Perception and Expectations

Hutchinson and Beadle report that "teachers often transmit their expectations through unintended non-verbal cues and students are often unaware of these expectations". [3-66] For example, Delucia[3-67] found that "teachers expect college students to be self-motivated and self-reliant. If the teacher does not perceive the student in this fashion, the student is considered "passive" or "difficult to work with"." [3-67] This perception may be accurate interpretation of the student, or may not be; however, either way, it has a negative impact. Carter[3-59] states that "teachers must identify their own filters and agendas that might inhibit their willingness to establish a creative environment." [3-59]

Communication

Hutchinson and Beadle[3-66] argue that "teachers can turn on or turn off students by their communication styles" (p. 405). They also suggest that "the teacher's communication style is related to students' satisfaction and achievement. Communication in the classroom as they have described it includes feedback, directing, questioning, and explaining. Other forms of communication are important, but the immediate feedback and feedback on assignments tend to have the most impact".[3-66] Morganett[3-58] suggests that "teachers provide positive constructive criticism in creative classrooms when appropriate". In addition, Shaughnessy argues that "this practice will foster a comfortable and safe environment which will enhance the sharing of creative ideas and thoughts".[3-35]

Moreover, communication is a necessary tool for collaboration, feedback, and

understanding the students and other teachers. It manifests a physical and emotional energy that leads to an alert cognitive and socio-emotional understanding of interpersonal relationships and situations.[3-5] Castillo (1998)[3-68] used communication, coaching and feedback to provide young children with instructions in applying analogies and metaphors.

Morganett[3-58] states that "teachers should communicate to students that they care about them as individuals as well as a class. Students want to know that their teachers have a vested interest in them academically, but more importantly – personally".[3-58] Morganett[3-58] further asserts that "this personal interest is important because when we [people, teacher or students] feel accepted by others, we have the feeling that they care about us … we are more likely to cooperate with them and try to please them" (p. 261).[3-58]

Raising Self-Confidence in Students

Morganett[3-58] states that "teachers can recognize effort, cooperative and helping behavior, which will promote a supportive classroom environment. This nurturing environment encourages students to trust their own judgment, while providing support and guidance".[3-35] Therefore, it is important to provide both verbal and written positive feedback either in class or on assignments. Lilly et al. argue that "the teacher can encourage regular feedback by walking around students as they are working, asking questions, listening to ideas, and providing alternative suggestions and strategies".[3-5]

Moreover, some students back away and resist in sharing their ideas due to lack of self-confidence. Lilly et al. mention that "Grace, who is an award winning teacher with over 20 years of experience in primary, secondary, college and universities, describes a strategy that allows students to build trust and risk opening up and gain self-confidence".[3-5]

"[After] my first [university] course, I didn't feel I was successful at getting them to speak collectively, collaboratively, and I realized that they might not feel safe. So, the next time I taught a course I had them make written responses throughout and it established an

incredible bond. And they just shared like crazy [laughs]. Once they realized it was OK, boy, I couldn't shut them up. So, that was good (September, 1999)." [3-5]

Furthermore, Grace argues that "this connection is developed and maintained in part through the cybernetic process of insight and questioning that provides feedback to both students and the teacher, contributing to stimulating self-other awareness".[3-5] Lilly et al. further assert that "Grace asks questions of students and monitors verbal and non-verbal communication in class. She also monitors understanding of the content through exercises and activities requiring students to provide written responses. She believes that it is through this process that trust is established, and independent learning, independence and confidence are developed".[3-5]

Personal Experiences

Carter[3-59], Morganett[3-58,3-64], and Shaughnessy[3-35] report that when teachers include their personal experiences and allow students to share personal experiences in the classroom, students have a greater opportunity to relate to the course. Furthermore, Wilson, Wood, and Gaff (1974) state that when students are able to relate their personal experiences to the course content, then, they tend to be more active in the learning process.[3-69] Antonietti[3-70]compared paper and pencil classroom exercises with real life stories as a basis for providing practice in applying analogies. She found that using real life stories lead to gain in creative thinking skills.

Here, let's add that we learn who we are through our life experiences. Lilly et al. state that "teachers must create an environment so that the students will risk discovering important information, which will help them and the teachers form responsible quality relationships, and thus, have better impacts on the learning process". [3-5] Carter[3-59] cites "Gandini, stating that "one of the premises of creativity is that the process of knowing finds connections with the process of expressing what is known" (p. 39), which implies that students are more able to express what they know if they can relate their knowledge to information from their experiences". [3-59]

Openness and Freedom of Choice

Kawenski[3-71] and Smith[3-72] argue that "for students to become creative within educational contexts, creativity needs to be supported in the classroom. Creativity has been identified as a high-risk job for students". "Being creative in traditional classrooms is often difficult for students because they become afraid to take risks, afraid to explore new ideas, and afraid to fail" (Kawenski[3-71], p. 263). Smith[3-72] states that students need to be prepared for "risks of ridicule, of rejection, or of sever resistance to a new idea when they are being creative" (p. 271). Traditional educational systems have allowed students to feel more comfortable by not being creative.

Bamford and Schacter et al argue that "although, creativity as a skill gains continuously more importance in our changing society, the occurrence and stimulation of creativity in schools are limited".[3-73,3-74] Bono and Runco give an example as "allowing pupils to make mistakes and considering several answers provide substantial steps in the process of creativity development, whereas educational practices frequently apply the principle of the "one correct answer" (convergent thinking). Obviously, such an approach can be considered restrictive for creativity development". [3-42,3-75] In addition, Schacter state that "research indicates that the majority of primary school teachers do not implement teaching strategies fostering pupils' creativity".[3-74]

De Backer et al. mention that "Cropley (2001, in Steers[3-33] 2009) argued that teachers fostering creativity are those emphasizing flexibility, accepting alternative suggestions and encouraging expression of ideas. Unfortunately, as discussed before, this group consists of a minority as a result of a closely monitored educational system with nationally prescribed requirements such as national curricula, assessment and inspection regimes in which creativity cannot easily flourish".[3-44]

Cole et al.[3-65] argue that "one method to create a supportive college classroom environment and letting students be free is by de-emphasizing standardizations and grades. Traditional exams are counter-productive to creativity. Grades are a hindrance to all types of learning and are especially detrimental to any type of learning that requires

risk-taking. Instead, grades can be determined by four factors: (a) the students' creative solution to the problem; (b) how well the students executed the solution; (c) how much work the students put into the problems and assignments; and (d) the students' written analysis of their creative process. Grading based on creative solutions and effort rather than exams can serve to individualize assessment and turn students' attention toward learning and creative expression rather than evaluation".[3-65]

Dr. Wilson, who has several years of experience on creative teaching and worked with Cole et al. on an experiment regarding creative teaching, also encouraged independence and freedom of choice saying that "it would enhance students' ability to find their individual creative style".[3-65] In creating a comfortable and safe environment, "Dr. Wilson promoted a diversity of ideas, often reminding students that in his class, there was no one right answer. This openness contributed to creating an environment conducive to risk-taking. The syllabus clearly conveyed this sentiment, stating, "Finally, in case there still might be some doubt at this point in the semester, *there is no right answer*!"[3-65] Following that, the students felt that the element of openness and acceptance helped them in expressing creativity by providing a sense of flexibility. Because they were not searching for a particular answer or the teacher's "correct" view, students were free to consider many ideas and perspectives." [3-65]

Overall, "the combination of freedom and basic guidance contributes towards an environment conducive to creativity. Allowing choices will be possible due to the absence of standardization in evaluation and this will contribute to the atmosphere of individual expression and personal growth". [3-65]

Classroom Activities

Classroom activities can be another important element. Cole et al. argue that "classroom activities can be designed in ways that can challenge students' current perception of creativity as a "one moment" in time expression and change these perceptions to view creativity as a process than be cultivated and developed within context of the

classroom".[3-65]

Runco states that "creativity arises when activities are presented in a permissive and game-like fashion".[3-75] Shapiro[3-76] suggests that "the proper selection of classroom activities can create a positive classroom climate in which values can be shared and challenged, expectations revealed and discussed, and students can have the opportunity to take leadership roles in the class. In this type of classroom activities, teachers need to address common misconceptions about creativity and teach creative process and methods of enhancing students' creative expression". [3-76]

Cole et al. further state that "creativity in education has been hindered by a common misconception of creativity as mysterious (undefined), magical (only certain people have the "gift"), madness (to be creative you have to be strange or abnormal), and even a one-step process consisting of a "eureka" moment (Wright[3-12], 1990). These beliefs have hindered the teaching of creativity".[3-65] Despite these misconceptions of creativity, Jim Wright suggests that "teachers can create a supportive environment of creativity by encouraging students to see creativity as a learned process, which can be attained through effort and practice".[3-12] For example, Baer (1996)[3-77] used a mix of small group and individual product generation exercises to train creative writing in middle school students.

Finally, in order to obtain better results, Cole et al. argue that "some techniques designed to provoke ideas may include: brainstorming, thumbnail sketches, matrixes, and small groups. Brainstorming is a process in which students focus on producing as many ideas as possible, waiting until after this process to evaluate these ideas. Thumbnail sketches allow students to visually experiment with ideas by drawing rough sketches before working on the final product. Matrices are a set of cells in which students write ideas and juxtapose these ideas with one another by matching cells. Small group work is another method enhancing creative processes. These groups are free to negotiate their own delegation of responsibilities, and the teacher can act as a facilitator. These methods can provide instruction in divergent thinking by encouraging students to generate ideas in a playful manner".[3-65]

3-4. Arts Education and Creativity

Creative intelligence is relevant to all aspects of the school curriculum, yet it is through art and design that pupils may come to experience the significance of creativity as a means of exploring innovative and original ideas which offer credence to the individual and affect approaches to learning[3-2]. Stevensen[3-78] argues that "the challenge to education must never be simply to raise test scores, which is relatively recent and limited goal. The challenge must be to raise citizens who are capable of active participation in the community, and the arts can help in realizing a vision creating this kind of democracy (p.5)". [3-78] From an educational point of view, De Backer et al. further state that "the arts as a medium can stimulate several development areas of the pupils (e.g. creative, dynamic-affective, psychomotor, and social)".[3-44]

Jane Parker states that "as individuals, students have different forms of intelligence. The inherent flexibility of learning offered by art and design can establish a positive relationship between intelligence and creativity. Creative challenges, both in terms of teaching strategies employed and opportunities presented for students to develop creative responses, characterize the significance of art and design in establishing a vital and effective learning environment".[3-2]

Moreover, Prummel states that "working with art can be an excellent and useful exercise to develop pupils' divergent thinking. Indeed, artists approach reality from different perspectives".[3-43] Hence, Jane Parker argues that "creative challenges, both in terms of applied teaching strategies and presented opportunities, characterize the significance of art in establishing a vital and effective learning environment".[3-2]

De Backer et al. argue that "in artistic education, teachers can stimulate individual's own contributions rather than using an example which everyone has to imitate: in other words, allowing pupils to give expression to their impressions of experiences in a personal way, which is an essential part of creativity. Thus, artistic education can be considered a fertile area for the development of creativity".[3-43, 3-44,3-79]

Additionally, Parker states that "art and design can offer diversity and relevance that

may complement and challenge each student's academic ability, adding flesh to the theory of intelligence and creativity and overlapping sets".[3-2] Furthermore, De Backer et al. state that "arts education projects focus on the students' development of creativity by means of introducing art and artists with their divergent working methods into primary schools. Besides fostering students' creative openness and skills, arts education aim to transfer artistic enthusiasm to teachers in each project, as well".[3-44]

Moreover, creation is not the mysterious product of the unconscious but rather the product of hundreds of unattended hidden mental processes, much like walking. The artist attends to his work, not the sequential steps of the process. In recollection the artist may remember the "insight" as a flash of inspiration when in fact it is the accumulated product of intense thought, preparation, and desire (Perkins, 1981, pp. 11-45) [3-17]. The creative act is a holistic one. It requires a blending of concept and feeling, analysis and intuition. Feeling and knowing becomes one, and the artist recognizes the merits of relying on the "rightness" or "wrongness" of solutions based on his or her increased awareness and sensitivity to the selected problem[3-12].

When creativity becomes the watchword and focal point of art education, the field will be embracing definitions of creativity that are inextricably linked to novelty and spontaneity. Curricula can be designed to promote spontaneous and divergent behavior in the belief that, ipso-facto, creative learning is taking place[3-12]. These concepts also develop in the time-bound context of a dominant non-representational aesthetic (abstract expressionism), heart-felt stances against copying, and eventually a non-directive philosophy for education generally, and art education specifically[3-12]. Then, we can realize that creativity and art are inseparable[3-80].

Jane Parker states that "in art and design, structure and commitment coexist with creating a personal vision and a new of seeing and exploring ideas. Structure by its very nature can support the development of sound practice in art and design. On one level, it offers success to the students who are able to succeed by working creatively within established confines. Significantly, it also empowers the students who are prepared to move beyond the framework of suggested possibilities as they embark on a creative personal

journey of exploration and discovery".[3-2]

De Backer et al.[3-44] did "an experiment by introducing artists into primary schools. By doing this, they reported a noticeable increase of teachers' artistic creative work in primary schools. Moreover, they concluded that arts education projects focus on pupils' creativity development during projects by means of divergent working methods".[3-44] They further state that "these findings were in line with other research (Atkinson 2006)[3-81]".[3-44]

Lastly, students need to be encouraged to be "making art" and be given freedom, security, and encouragement. The art creative teacher should consider being a model versus an advisor[3-12]. We cannot expect our students to really create if we do not give them the time, skills, nurturing and conditions to do so[3-12].

3-5. Conclusions

In this chapter, meanings of creativity, creative education and characteristics of a creative teacher were defined by referring to other researches.

It was observed that "creative people have characteristics like: flexibility, independence in judgment, logical thinking skills, visualization, problem finding, and finding order in chaos".[3-24,3-26]

Moreover, it was concluded that creativity has been misjudged and has been interpreted as something mysterious and magical and something that only some children have as a "gift". Because of these beliefs, the teaching of creativity has unfortunately been neglected. Most school environments do not support creative expression, and – in terms of creativity – teachers do not meet the needs of pupils.

Furthermore – because of these misjudgments – creative students often lose their creative potential. An example of Amabile and Collins[3-36,3-37,3-38] was discussed where they reported that "students' creativity has been found to suffer from the traditional teaching practices of evaluation, reward, competition, and lack of student choice".

However, despite all these beliefs and misjudgments, it was observed that teachers can create a supportive environment for their students and can encourage students to learn

creativity by effort and practice. Creative teachers' characteristics were discussed and some of the methods of creative teaching (e.g. teacher-student relationship, communication, raising self esteem in the students, freedom of choice, classroom activities, group works and etcetera) were discussed.

Moreover, it was observed that creativity and arts education are inseparable and arts education or artistic education can be considered as an important factor in order to develop creativity. In arts education, teachers can give the students more freedom of choice rather than using an example which everyone has to follow.

Overall, the importance of teachers, and education (specifically arts education) on students' creativity was observed.

Based on these findings, the experiments in Chapter Four will be conducted.

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CHAPTER FOUR

Creative Education and Color Preference

4-1. Background and Purpose of this Research

In chapter two, a cross cultural study[4-1] was conducted and it was concluded that arts education has a strong positive correlation with color preference in comparison with other case studies (regional, residential and personal).

Moreover, in chapter three, it was observed that arts education has a long standing love affair with the notion of creativity (Jim Wright, 1990). Creativity is the essence of true learning, is valid of all subjects, and is fundamental to making viewing and understanding art[4-2].

It was further observed that creativity leads to constant change and innovation in products, and contributes towards economy. Given the ever increasing complexity of our modern world, reaching one's full creative potential has clear benefits both for the individual as well as society[4-3]. The implication is that the economy demands creativity, and a healthy economy is necessary to a wealthy society which then produces assets for general consumption; better public amenities and services[4-4]. As the degree of complexity and the amount of information in our society continue to increase, society's problems require more creative solutions[4-5] and there is a need for a new generation of workers who are creative and innovative[4-6].

Furthermore, societies and schools can have a significant impact on creativity; however, this impact has not been sufficiently recognized in the first 3 decades of psychological study of creativity. Only in the last 2 decades have psychologists started to realize the importance of environmental factors such as societies and school on creativity[4-7].

Additionally, it was concluded that creative skills can be learned and therefore, improved[4-8, 4-9], and teachers have a significant role on this. They should allow themselves to engage in more creative activities and actively guide their students on how to be creative[4-7]. Creative teachers can help students to discover and make them capable of production and creativity and not simply repetition[4-10].

Those were the conclusions obtained from chapter three. However, in order to be clearer on the purpose of this chapter, a few more studies will further be discussed.

Both Claxton[4-11] and Craft[4-12] suggest a moral aspect to developing creativity wisely and indicate that educational institutions have a specific role in enacting this approach. Parker and Fisher et al. argue that the application of creativity in education is needed for further development[4-13] and creativity should play an important role within our system of education[4-14]. Yet, the direct relationship between education and the development of artistic talent and creativity remains ripe for exploration[4-15].

Furthermore, Lowenfeld and Brittain suggest that it is much more important to develop creativity in children, because creativity cannot easily be learned at older ages, and one can teach youngsters of elementary schools very much of artistic skills[4-16]. However, little research has focused on the creative education during early adolescence[4-17].

Therefore, in this chapter, (1) the correlation between arts creative education – during elementary and junior high school – and color preference will be identified and investigated. Moreover, (2) the influence of color education will be investigated.

The present study focuses on elementary and junior high school practices for the two following reasons.

First, the level of primary education and particularly the curricular structure provides opportunities and a lot of flexibility for teachers to enhance artistic creativity in artistic education as well as creativity in general over all curricular domains[4-18].

Second, the level of primary education can be considered important in the development of (artistic) creativity[4-19].

4-2. Methodology

4-2-1. Respondents

This was done in University of Tsukuba (Japan), between 124 Japanese students and 136 foreign students.

As seen in chapter one (1-4. A Research on Bedroom Wall Color Preference across Cultures), a cross cultural study[4-20] regarding interior color preference was previously

conducted and it was concluded that there is not much color variety when Japanese people are choosing colors for their bedroom walls. Only in Japan, more than half of the respondents (56%) had chosen white as their desired color for bedroom walls, and this wasn't seen in any other country or region (including Asian countries).

Moreover, the difference between the number of color varieties between Japanese subjects and non Japanese (foreigners and Iranian) subjects was clearly seen in chapter two as well.

Therefore, for this research, the subjects have been divided into 2 groups of Japanese and Foreigners. And I didn't see the need to divide the foreigners into more categories (based on their country). However, just to give a brief introduction, the foreigners were from: People's Republic of China (N=23), Indonesia (N=3), Vietnam (N=1), Philippines (N=1), Iran (N=6), Tajikistan (N=3), Kazakhstan (N=3), Ethiopia (N=2), Malawi (N=4), Senegal (N=3), Nigeria (N=2), Uganda (N=1), Algeria (N=2), Morocco (N=1), Papua New Guinea (N=1), Australia (N=7), The Netherlands (N=9), Austria (N=5), Germany (N=7), Hungary (N=4), Romania (N=5), United States of America (N=10), Brazil (N=17), Guatemala (N=3), Chile (N=2), Costa Rica (N=6), Panama (N=2), Ecuador (N=1), and Peru (N=2).

The subjects were furthermore randomly divided into 2 groups (Table 4-1) in order to see the influence of interior color education.

Table 4-1. Number of the respondents

Foreigners		**Japanese**	
Foreigners I	Foreigners II	Japanese I	Japanese II
74	62	67	57

Moreover, because of the purpose of this research, students whom were not art and design majored were the main subjects of this study. 6.6% of the foreigners (N=9) and 6.4% of the Japanese subjects (N=8) were art and design majored. The rest were from different majors such as: literature, economics, linguistics, psychology, human care sciences, engineering, sociology, history, biological science, international relation, robotics and etcetera.

4-2-2. Instrumentation and Procedure

This experiment was done between November 2013 and January 2014. The following steps were designed, in order to be able to achieve both purposes of this study.

1) Bedroom drawing (Figure 4-1) – 24 color pencils were provided for each subject. [Appendix IV]

Subjects were given 10 minutes to complete this drawing as desired (they were asked to consider it as a bedroom they would want and color it out according to their preference). However, they could hand in their drawing before the 10 minutes was up.

(This is the same bedroom drawing that was used in chapter two.)

Figure 4-1. Sample of bedroom drawing

2) Subjects were shown 56 bedroom samples (pictures) using computer and a projector (Figure 4-2) (colorful bedroom samples (Figure 4-3) to Japanese I [N=67] and Foreigners I [N=74], and black and white bedroom samples (Figure 4-4) to Japanese II [N=57] and Foreigners II [N=62]).

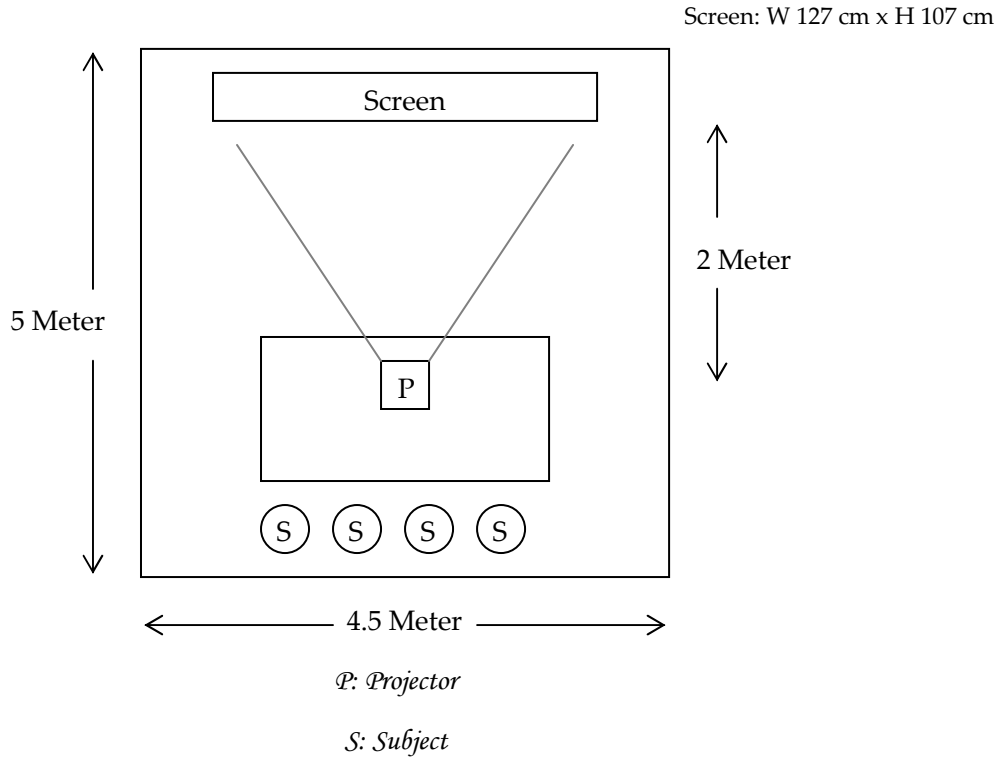


Figure 4-2. Sample of the experiment room

Note: The same samples were shown to both groups and the only difference between the samples was the samples being monochrome or not. Here, I have picked 6 different bedrooms as samples just to show the variety. [However, all the bedroom picture samples can be seen in Appendix V and Appendix VI.]

Due to copyright, Figure 4-3, Figure 4-4, Appendix V, and Appendix VI cannot be published.

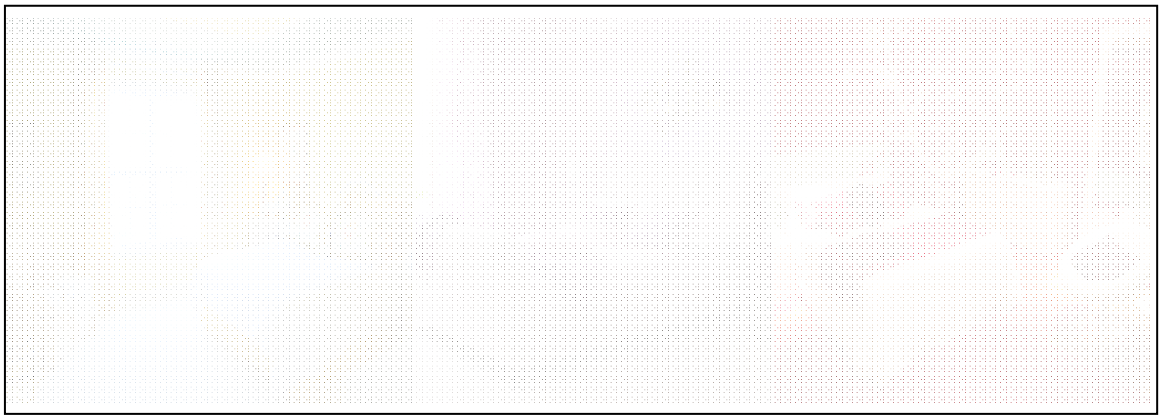


Figure 4-3. Sample of colorful bedrooms shown to the subjects

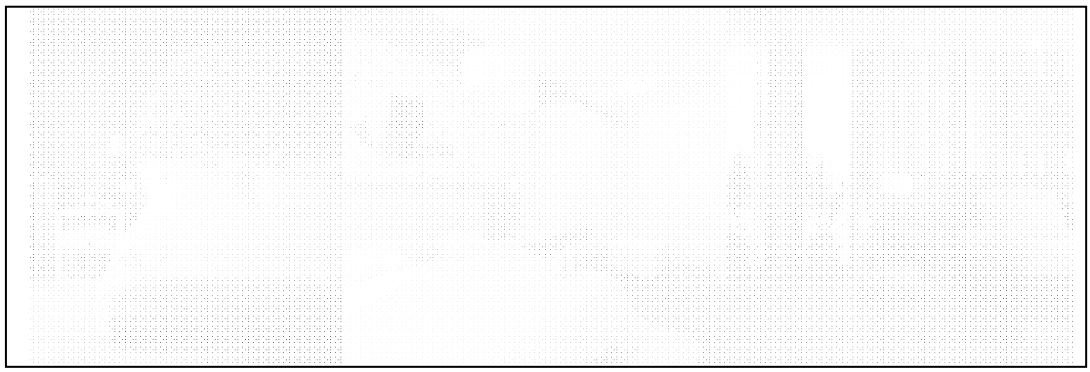


Figure 4-4. Sample of black and white bedrooms shown to the subjects

3) Same bedroom drawing as step 1 (Figure 4-1) [Appendix IV] – Similar to step 1, they were provided with 24 color pencils. Additionally, they had 10 minutes, but they could hand in their drawing before the time was up.

4) A questionnaire consisted of 15 questions regarding the environment the subjects have lived in and the education they have received in elementary and junior high school. These questions were mainly designed based on the findings of chapter three.

English questionnaire was provided for foreign subjects [Appendix VII and Appendix VIII], whereas Japanese questionnaire was provided for Japanese subjects [Appendix IX and Appendix X]. Both English and Japanese questionnaires were checked by native speakers just to make sure the English and Japanese semantic meanings were properly matched.

All the subjects were asked the same questions; however, subjects (both foreigners and Japanese) who saw colorful bedroom pictures had an additional question where they were asked if they wish to use more colors in their interior after seeing bedroom pictures.

4-2-3. Data Analysis

The data was analyzed by comparing the (answers of the) questionnaire with the number of color varieties used in the first drawing, and also comparing before and after drawings done in steps (1) and (3) in the experiment. Furthermore, the data was analyzed by using Microsoft Excel; however, JMP (Statistical Discovery Tool from SAS) was further used in data analysis in order to show the data significance. In JMP, the data was analyzed and signified by performing a t-test and Analysis of Variance (Means/ANOVA).

Moreover, like chapter two, the colors (used in the drawings) were one by one matched with the color pencils (given during the experiment), and were counted carefully. In addition, like chapter two, if patterns were used by the subjects, the colors used in the patterns were counted carefully and patiently as well while colors being matched with the color pencils.

The comparison between the answers of the questionnaire and the number of color varieties – which is to see the correlation between creative education and color preference – will be discussed from "4-3-1" to "4-3-10", whereas the comparison of the drawings [of step 1 and step 3] – which is to see the influence of color education or bedroom picture samples – will be discussed in section "4-3-11" to "4-3-13".

4-3. Results

4-3-1. Colorful Environment and Number of Color Varieties

The respondents were asked if they lived in a colorful environment; whether colorful interiors, colorful exteriors, both or none. From Figure 4-5, it is observed that subjects living in colorful areas had used more number of color varieties in their drawing rather than those who didn't ($P<0.05$). [X axis shows the number of color varieties while Y axis shows the percentage of the people. This is the same for all the graphs in this chapter.]

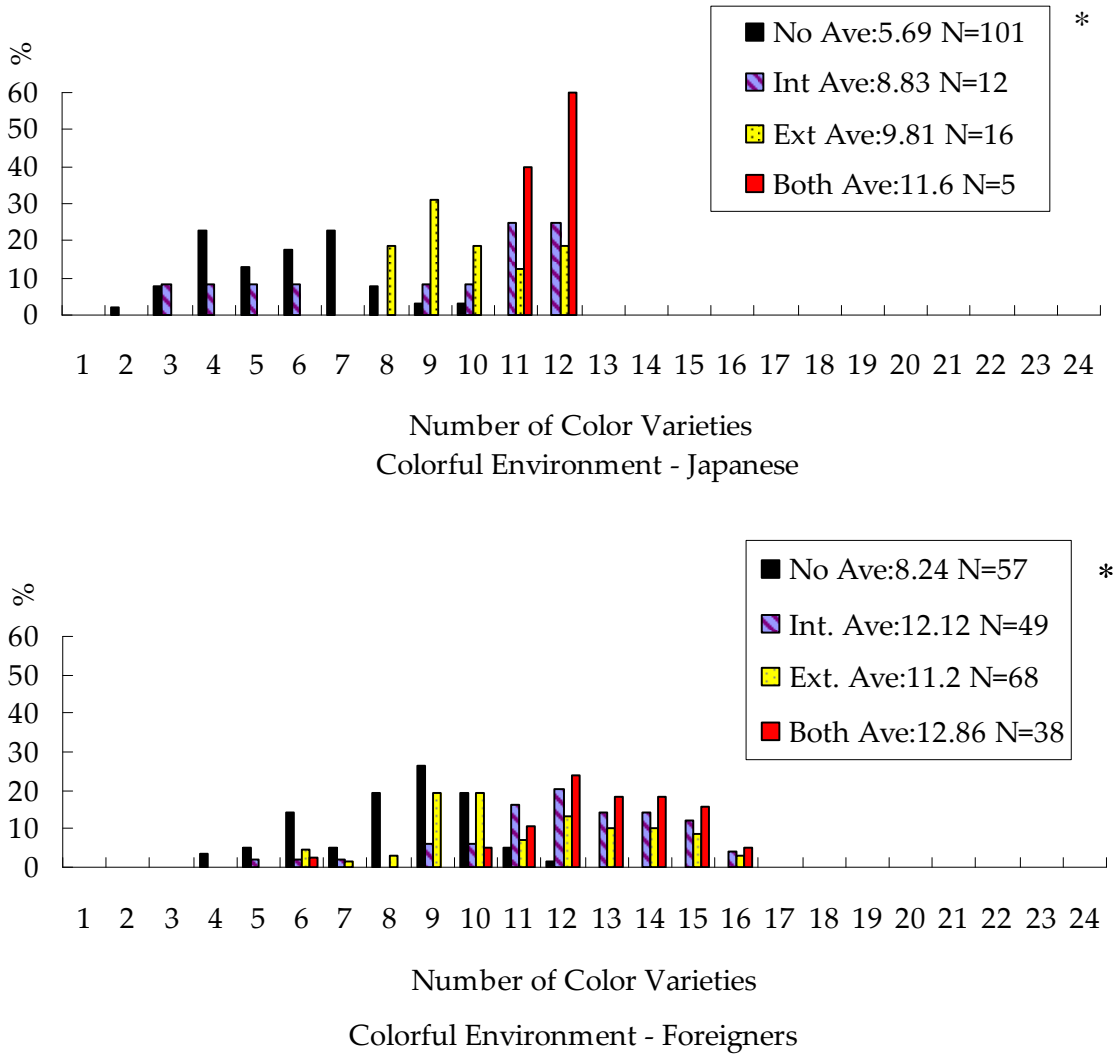
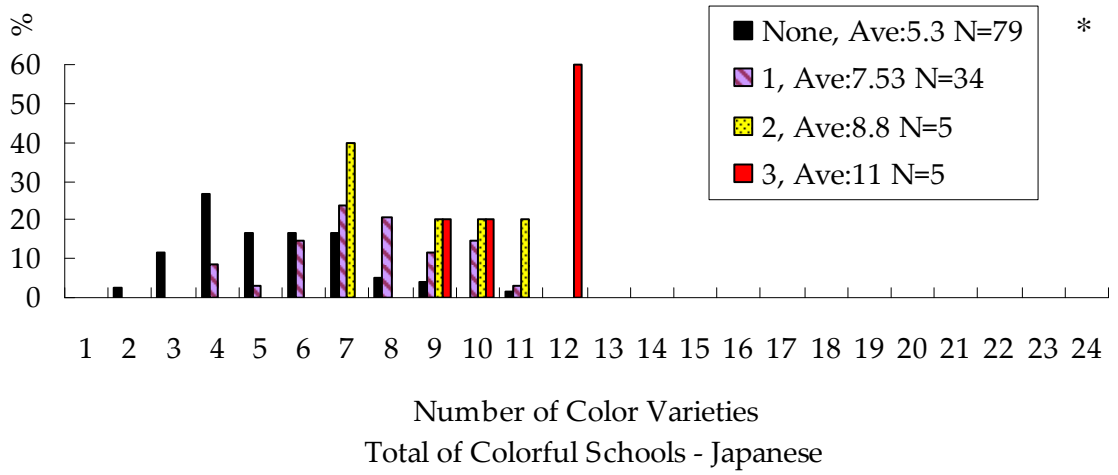


Figure 4-5. Living environment and number of color varieties

*Note: * P<0.05*
*** P<0.01*

4-3-2. Colorful Schools and Number of Color Varieties

Another question the subjects were asked was if they went to colorful schools during elementary, junior or senior high school; whether they didn't go to any colorful schools or just 1, or 2 or all three. It was concluded that the subjects who went to colorful schools had used more number of color varieties compared to those who didn't ($P<0.05$) (Figure 4-6).



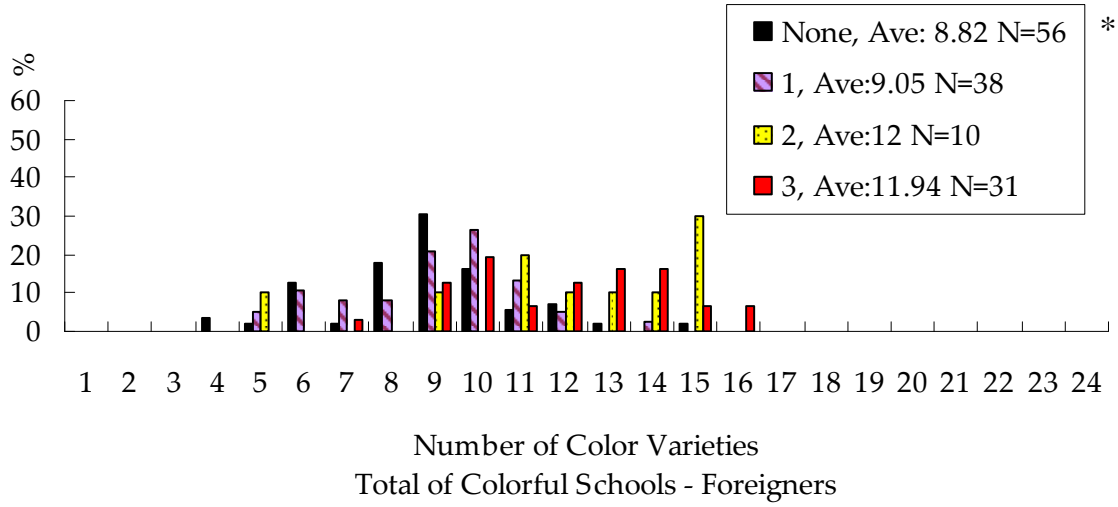
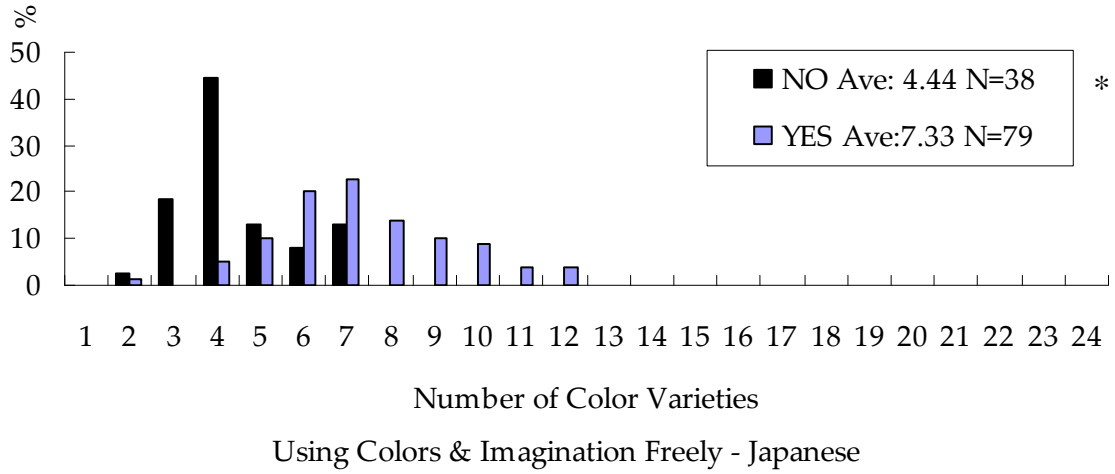


Figure 4-6. Colorful schools and number of color varieties

4-3-3. Using Colors and Imagination Freely during Childhood

The respondents were asked if they were able to use colors and their imagination freely during childhood, and elementary and junior high school or if their teacher would ask them to use more realistic colors and objects. It was concluded that subjects who were free to use their imagination used more number of color varieties in their drawing compared to those who didn't (Figure 4-7). This was seen in both Japanese ($P<0.05$) and foreigners ($P<0.01$).



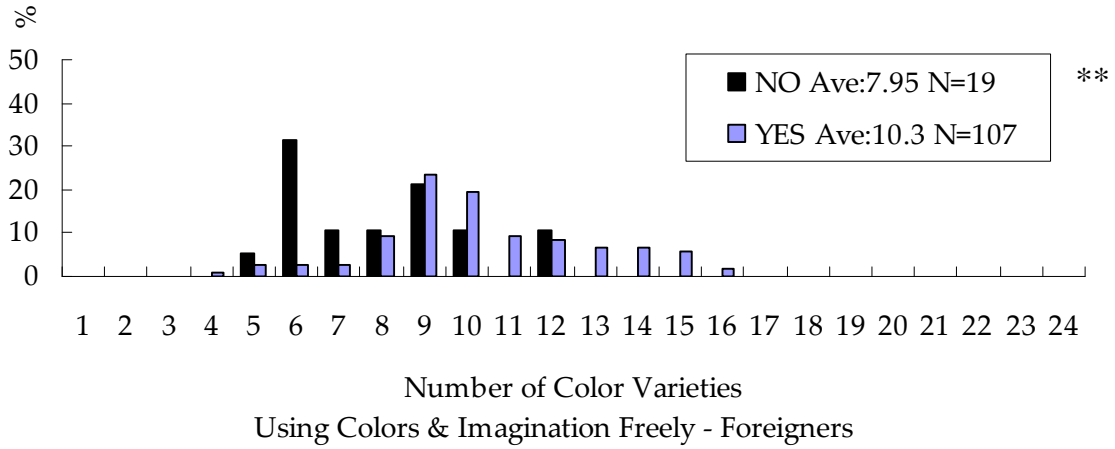


Figure 4-7. Using colors and imagination freely, and number of color varieties

4-3-4. Creative Activities during School

The subjects were asked if they had any creative activities at school (e.g. making posters/stamps/art books and videos/holiday cards; looking at paintings and discussing them; drawing on disposable paper cups/plates or others). It was observed that with more creative activities, more color varieties were used in the drawing ($P<0.05$) (Figure 4-8).

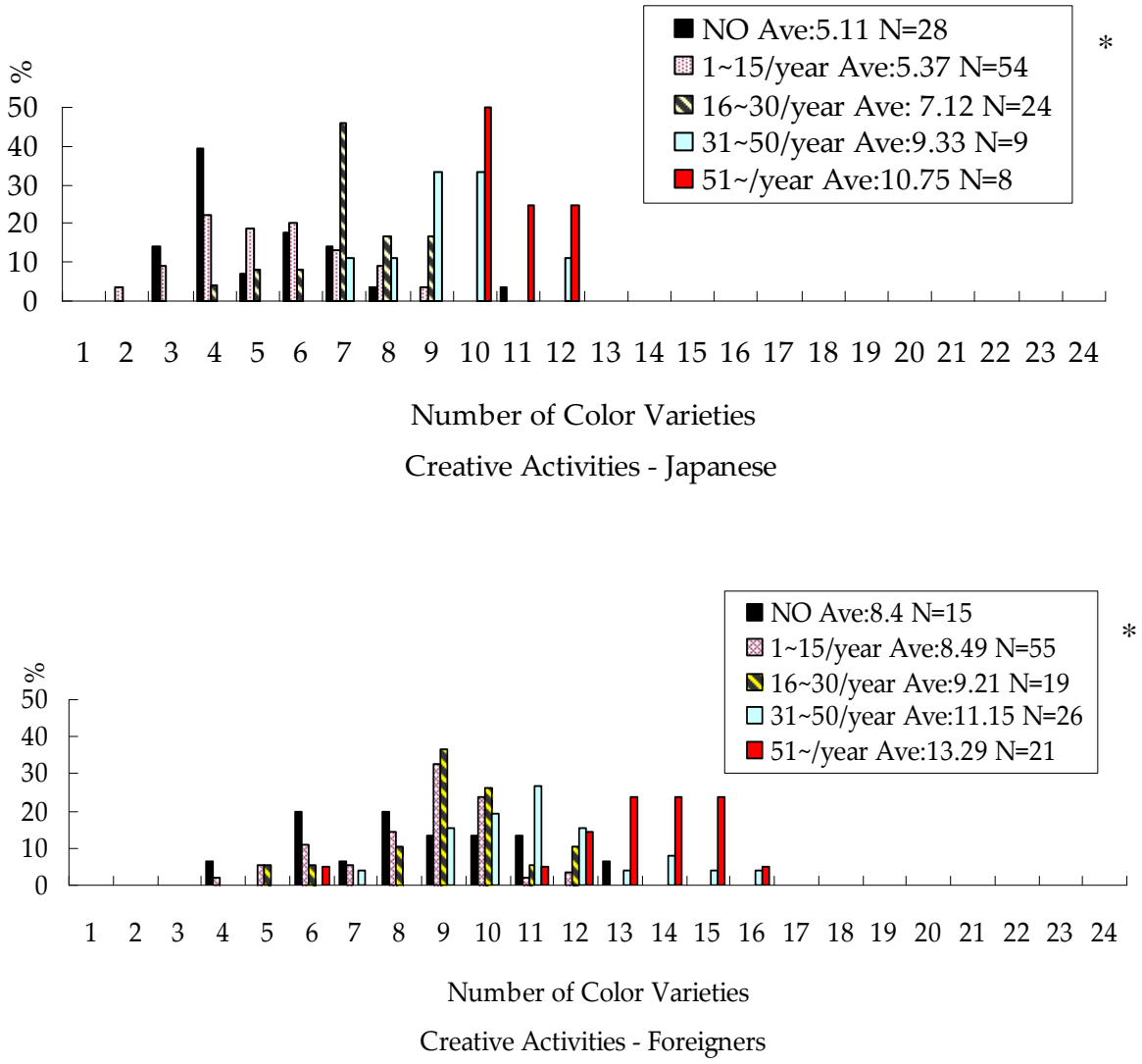
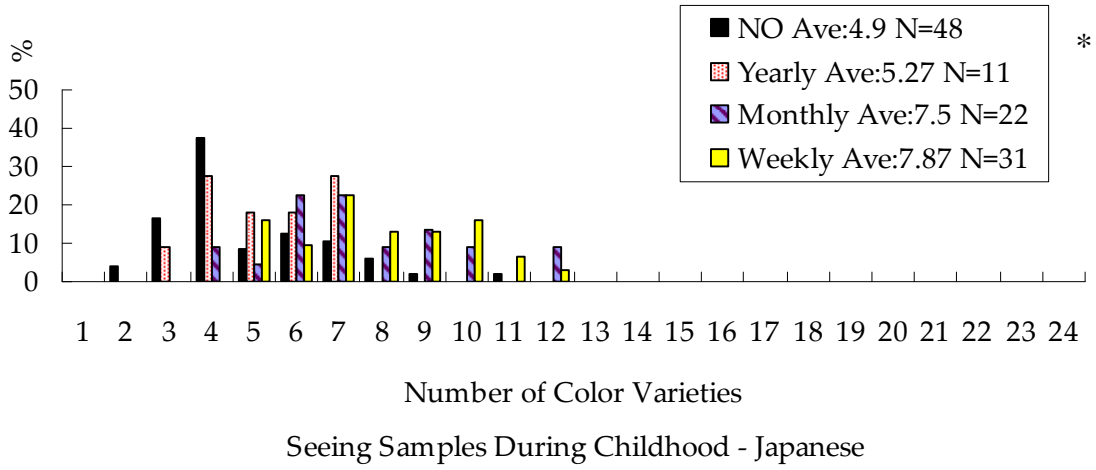


Figure 4-8. Creative activities and number of color varieties

4-3-5. Seeing Samples during Childhood

The respondents were asked if they had seen any art samples like photography, fashion, products, calligraphy, architecture and interior, arts and crafts or others during their childhood. From Figure 4-9, it is observed that subjects whom had seen art samples weekly or monthly had used more number of color varieties rather than those who did not see any samples at all or saw them only yearly during childhood ($P<0.05$).



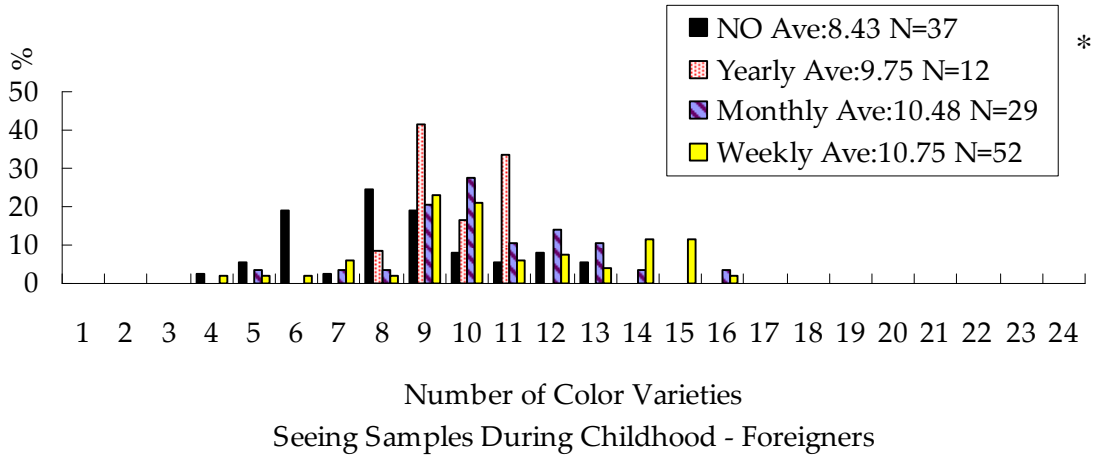
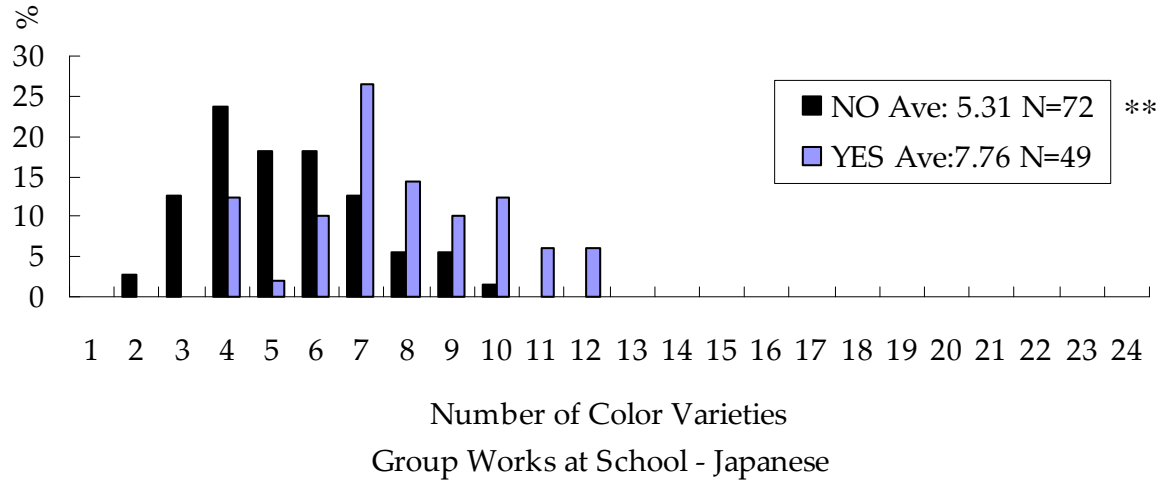


Figure 4-9. Seeing samples during childhood and number of color varieties

4-3-6. Group Works at School

Another question in the questionnaire was if the subjects did any group works during their elementary/junior high school. The results indicated that respondents who had group works at school used more number of color varieties in comparison with those who didn't ($P<0.01$) (Figure 4-10).



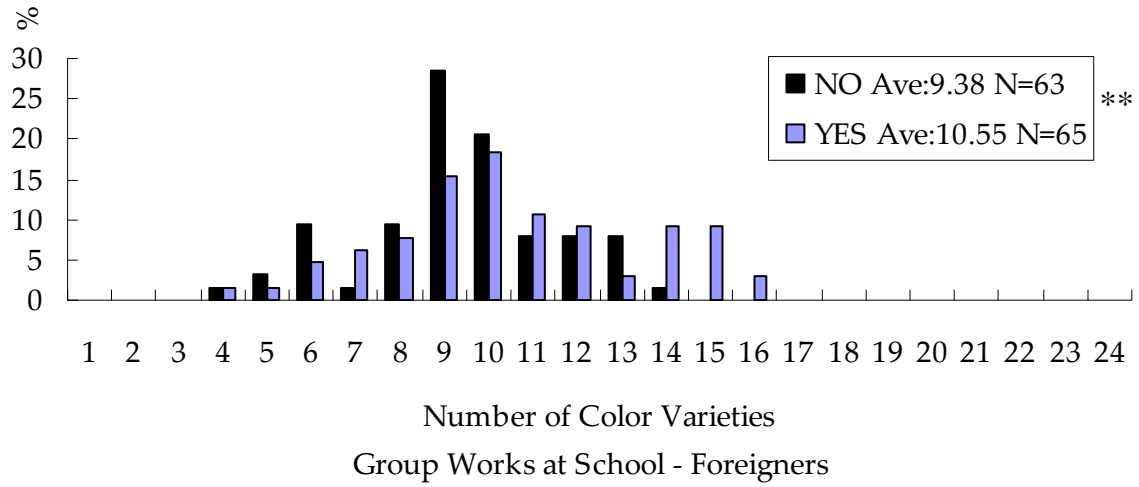


Figure 4-10. Group works and number of color varieties

4-3-7. Art Schools and Number of Color Varieties

The subjects were asked if they had been to any art school (aside from their school) – e.g. drawing, painting, photography, calligraphy or others during childhood. It was observed that the respondents who went to art schools used more number of color varieties compared to those who didn't (Figure 4-11). Like the rest of the previous results, this was seen in both Japanese ($P<0.01$) and foreigners ($P<0.05$).

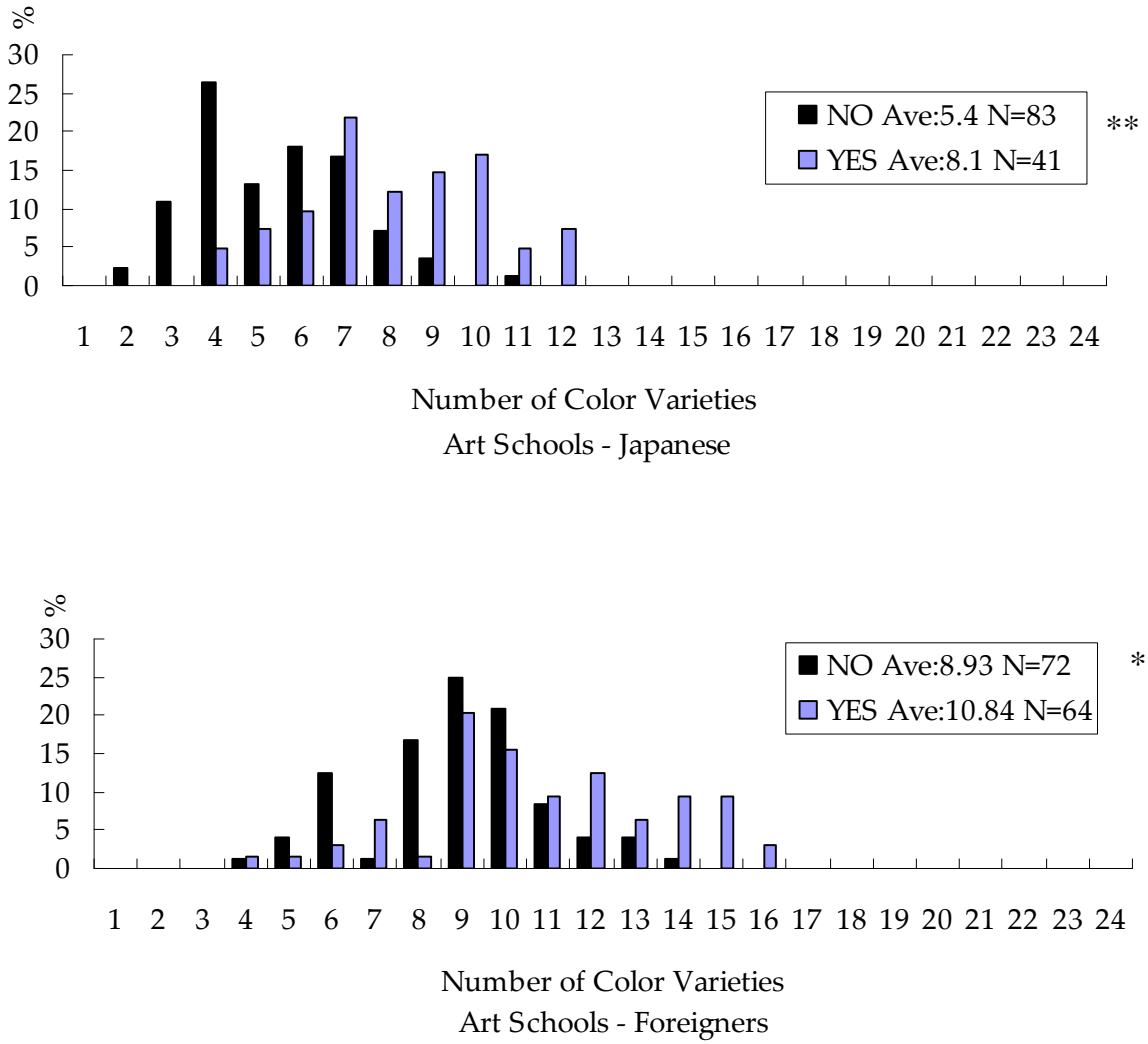


Figure 4-11. Art schools and number of color varieties

4-3-8. Visiting Museums during Childhood and Number of Color Varieties

Another question was if the subjects visited any museums during their childhood and how many times a year. It was observed that subjects who visited museums more than twice a year used more number of color varieties compared to those who only visited once or none at all ($P<0.05$) (Figure 4-12).

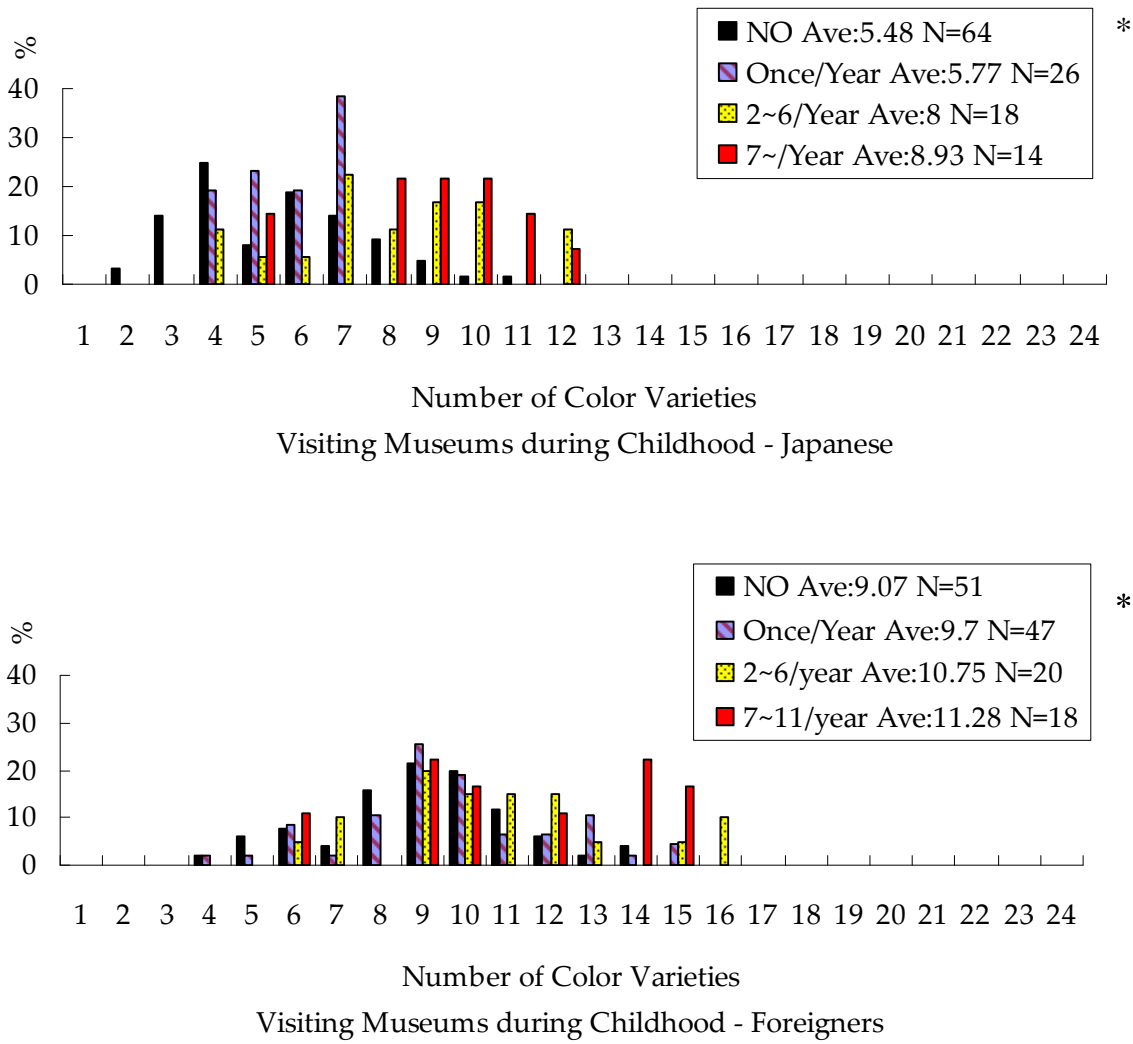
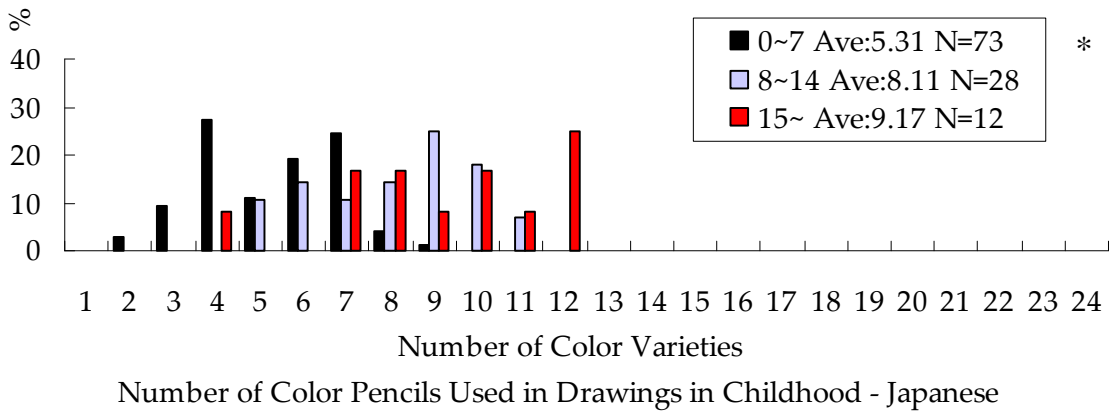


Figure 4-12. Visiting museums and number of color varieties

4-3-9. Number of Color Pencils Used in the Drawings during Childhood and Number of Color varieties

The respondents were asked how many color pencils they used during childhood and at school in their drawings and paintings. From Figure 4-13, it was observed that the more color pencils they used in their childhood, the more color varieties they used in their drawing ($P<0.05$).



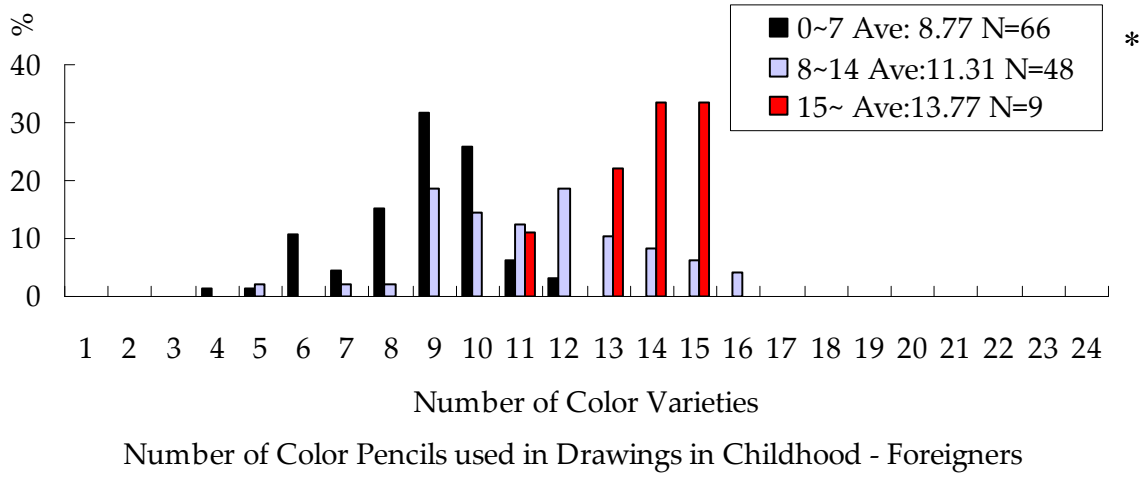


Figure 4-13. Number of color pencils used in childhood's drawings and number of color varieties

4-3-10. Parents' Backgrounds and Number of Color Varieties

Another question was the respondents' parents' background; whether their parents have art and/or design background or not. It was observed that the respondents whose parents had art or design background used more number of color varieties compared to those who didn't (Figure 4-14). This was seen in both Japanese ($P<0.01$) and foreigners ($P<0.05$).

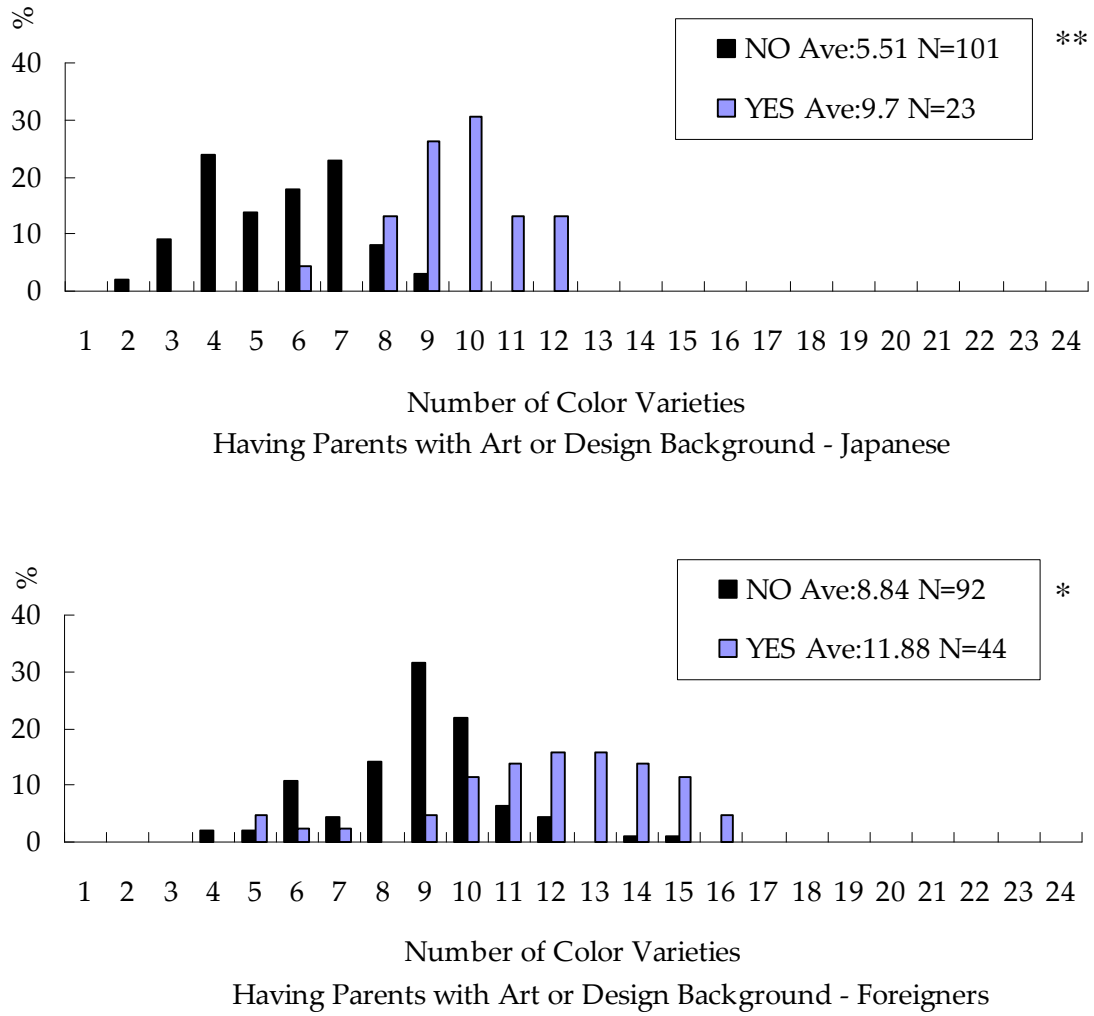


Figure 4-14. Parents' background and number of color varieties

4-3-11. The Influence of Samples on Number of Color Varieties

As mentioned earlier, colorful bedroom samples (pictures) were shown to Group I (Japanese I and foreigners I), while black and white bedroom samples were shown to Group II (Japanese II and foreigners II).

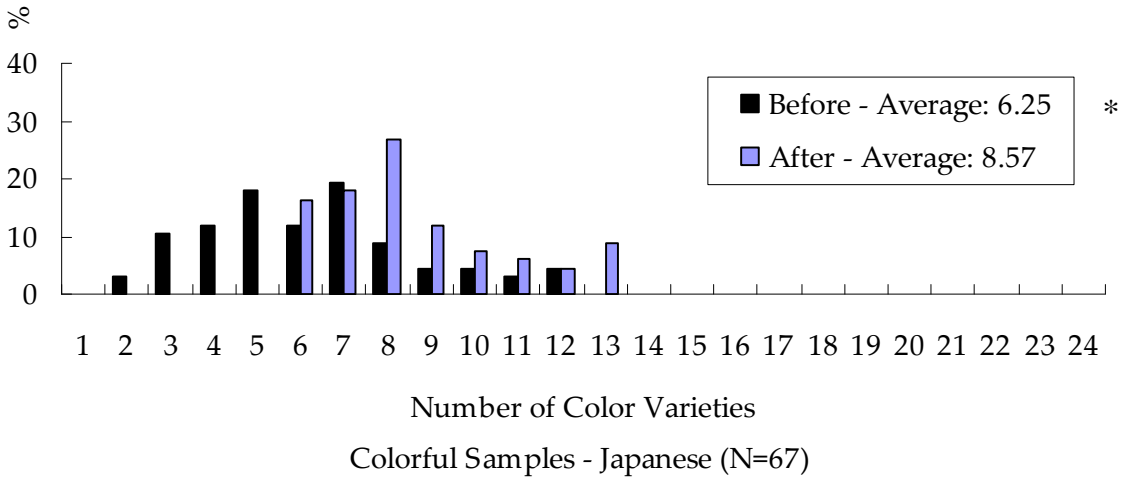
It was concluded that the respondents who saw colorful bedroom pictures used more number of color varieties in their second drawing ($P<0.05$). On the contrary, the subjects who saw black and white pictures used less color varieties in their second drawing ($P<0.05$). The results for Japanese subjects can be seen in Figure 4-15 where the y axis shows the percentage of the subjects and the x axis indicates the number of color varieties. The results for foreign subjects are in Figure 4-16.

Moreover, some examples of the subjects' drawings can be seen in Figure 4-17, and Figure 4-18 (for Japanese subjects); in Figure 4-19, and Figure 4-20 (for foreign subjects).

By looking at Figure 4-17, it is observed that in the before-drawings, mostly only objects have colors and there are no colors used in the walls; however, after seeing colorful samples, the subjects used more color varieties in their second drawing (colors are used in the walls as well). In Figure 4-18, less colors, and more black and white can be seen in the after-drawings.

As for foreign subjects, in Figure 4-19, it can be observed that not only more colors are used after seeing colorful bedroom samples, but also more patterns are used in the walls (and in the bed as well). Usage of patterns in the walls will be discussed more in 4-3-13.

From Figure 4-20, it is observed that although there are still many colors in the after-drawing, however, there is more usage/influence of black and white.



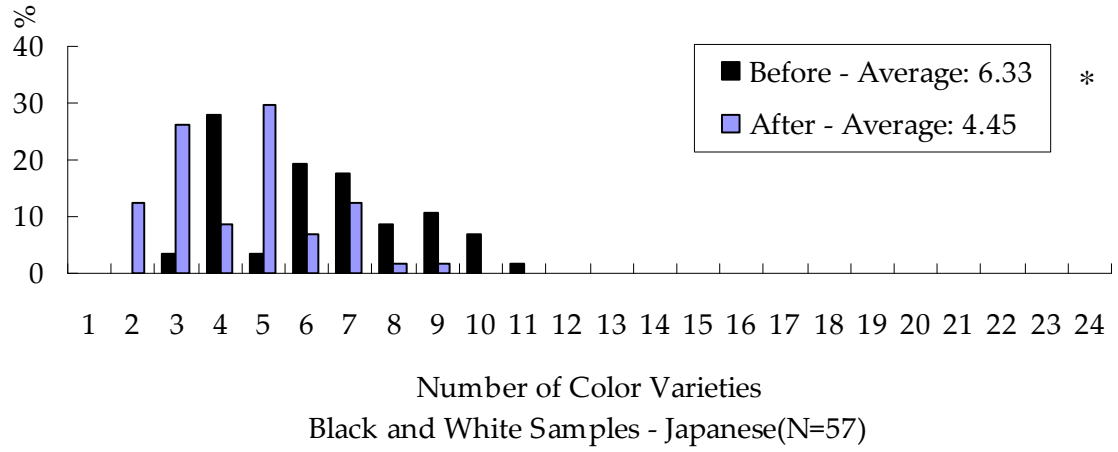


Figure 4-15. The influence of samples on Japanese subjects

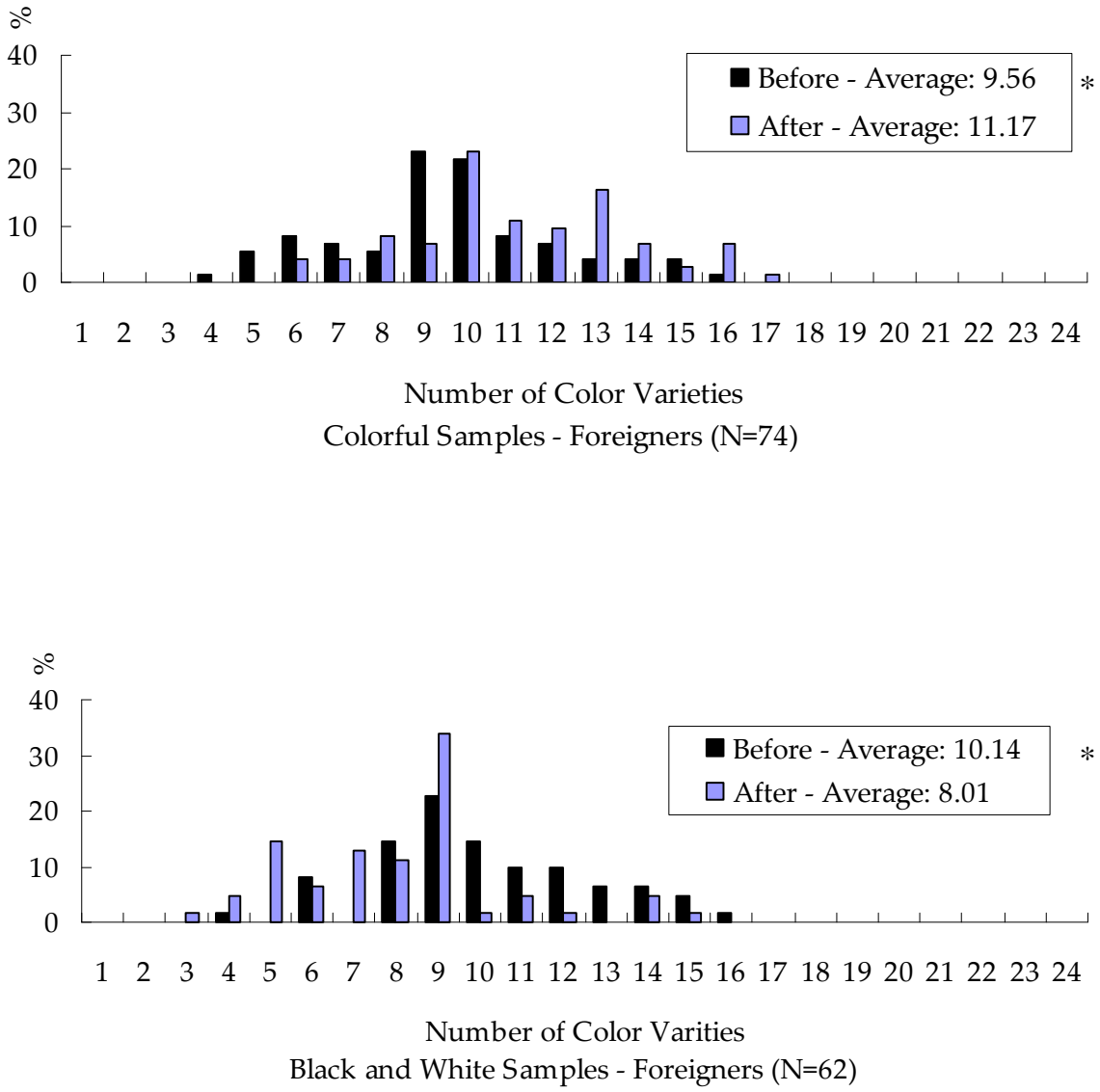


Figure 4-16. The influence of samples on foreign subjects

No: JP004CL

No: JP010CL

Before seeing bedroom samples

No: JP004CL

No: JP010CL

After seeing bedroom samples

Figure 4-17. Before and after drawings of 2 Japanese subjects

The influence of colorful bedroom samples

No: JP085BW

No: JP088BW

Before seeing bedroom samples

No: JP085BW

No: JP088BW

After seeing bedroom samples

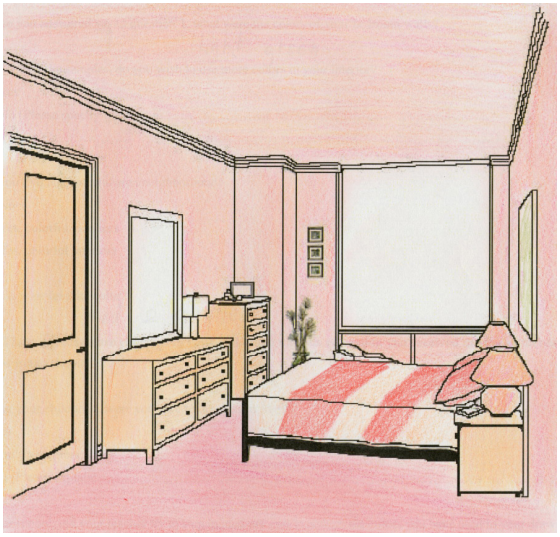
Figure 4-18. Before and after drawings of 2 Japanese subjects

The influence of black and white bedroom samples

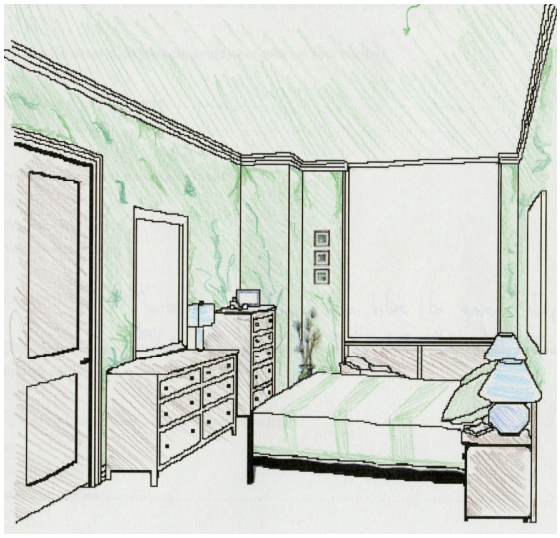
No: FR020CL

No: FR103CL

Before seeing bedroom samples



No: FR020CL



No: FR103CL

After seeing bedroom samples

Figure 4-19. Before and after drawings of 2 foreign subjects

The influence of colorful bedroom samples

No: FR076BW

No: FR110BW

Before seeing bedroom samples

No: FR076BW

No: FR110BW

After seeing bedroom samples

Figure 4-20. Before and after drawings of 2 foreign subjects

The influence of black and white bedroom samples

4-3-12. Usage of Favorite Colors in the (Before and After) Drawings

In the questionnaire, one of the questions asked was the subjects' favorite color. The respondents were free to write any color they wanted and later on, the colors written by the subjects were purposely matched with the 24 color pencils (provided during the drawings) in order to be able to do the analysis. Those colors are as following:

Black Gray White Red Orange Light Orange Dark Brown
Brown Light Brown Yellow Light Yellow Beige Olive Green
Green Forest Green Light Green Azure Blue Ultramarine Blue
Light Blue Purple Burgundy Pink Light Pink

Table 4-2 indicates the results for Japanese subjects, while Table 4-3 shows the results for foreigners. Both Japanese (in fact 100% of the Japanese subjects) and foreign subjects used their favorite color more in the second drawing after seeing colorful samples/pictures. However, all of the subjects tended to use their favorite color more in the first drawing (rather than the second one) after seeing black and white samples. In these tables, first drawing indicates the drawing before seeing the samples and second drawing means the drawing after seeing the samples.

Table 4-2. Usage of favorite colors in the drawings – Japanese subjects

Colorful Samples		**Black and White Samples**	
First Drawing	Second Drawing	First Drawing	Second Drawing
92.5%	100%	94.7%	82.5%

Table 4-3. Usage of favorite colors in the drawings – foreign subjects

Colorful Samples		**Black and White Samples**	
First Drawing	Second Drawing	First Drawing	Second Drawing
97.3%	98.6%	98.4%	93.5%

4-3-13. Patterns used in the Walls in the Drawings

Although, the main focus of this study is color preference and color varieties; however, this method (drawing) was chosen to see if the respondents will be creative and use any kind of patterns in the drawings (the walls). Moreover, some of the bedroom samples shown to the subjects had patterns on the walls and I wanted to see if the subjects were influenced, not only by the colors, but by the patterns as well. The results for Japanese subjects can be seen in Table 4-4 and for foreigners in Table 4-5.

Table 4-4. Patterns used in the drawings – Japanese subjects *p<.05

Colorful Samples*		**Black and White Samples**	
First Drawing	Second Drawing	First Drawing	Second Drawing
4.5%	68.6%	5.3%	0%

Table 4-5. Patterns used in the drawings – foreign Subjects *p<.05

Colorful Samples*		**Black and White Samples**	
First Drawing	Second Drawing	First Drawing	Second Drawing
16.2%	87.8%	14.5%	1.6%

As it can be seen from Table 4-4 and Table 4-5, all the respondents tended to use more patterns after seeing colorful samples ($P<0.05$). However, interestingly, the subjects used less patterns in their second drawing after seeing black and white samples even if the black and white bedroom samples shown to the subjects included patterned ones as well (like the colorful samples). Let me remind you that they all had the same amount of time for the drawings (10 minutes).

The patterns used consisted of: geometrical, mixed shades and striped; however, after seeing the (colorful) samples, they tended to use more patterns such as using hearts, flowers, and tree leaves in their drawings (as seen in Figure 4-19).

4-4. Discussion and Conclusion

In chapter two, a cross cultural study[4-1] was conducted and it was concluded that arts education has a strong positive correlation with color preference. Furthermore, Bourdieu et al [4-21] concluded that there are clear influences of education, background, and social class upon preferences. Therefore, in this chapter, using a questionnaire, bedroom drawing and bedroom samples, I identified the correlation between creative arts education during elementary and junior high school and bedroom color preference. Moreover, by showing bedroom samples, the influence of color education was observed.

However before getting into discussion about the results, there are some limitations that must be considered when interpreting these findings. It needs to be noted that other factors such as society and family environment could impact the notion of creativity[4-7,4-22~4-30]. Moreover, other researchers[4-31~4-40] suggest that there are barriers such as personality characteristics, intellectual capacities and social arrangements standing between the individuals and creativity. However, because of my previous study[4-1] (done in chapter two) and the lack of studies on the relationship between creative education and color preference, my focus in this chapter was on education and its relationship with color preference.

This having been mentioned, in this section, I will go through the results of each category and I will discuss and verify them by referring to other preceding studies and works.

From "4-3-1" and "4-3-2", it was concluded that the subjects who have lived in more colorful areas or subjects who went to colorful schools used more color varieties in their drawing. This finding is in line with previous studies. For example G. M. Michaels studied color preference of elementary, junior, senior high school students and concluded that environment and social status has an influence on development of preference for colors[4-41]. However, in this research, both environment of the school and the living area (interior and exterior) were studied and the correlation between environment and color preference was observed.

From "4-3-3", it was observed that respondents who were able to use colors and their imagination more freely during elementary and junior high school used more number of color varieties in their drawing. Jim Wright[4-2] argues that one of the characters of creative environment is: education that rewards and encourages free inquiry. Furthermore, Schacter et al.[4-42] and Runco[4-3] state that allowing pupils to use their imagination and make mistakes provide substantial steps in the process of creativity.

It was concluded that subjects who were exposed to seeing more samples like architecture and interior, fashion, arts and crafts, photography, calligraphy and others used more number of color varieties compared to those who weren't (4-3-5).

Moreover, subjects who used more number of color pencils (seen in "4-3-9") in their drawings during childhood and at school or subjects who went to art schools (aside from their own school) (observed at "4-3-7") had used more number of color varieties. Crozier[4-43] argued that the differences in color preference are due to the fact that the human reactions to color are conditioned by learned experiences.

It was further concluded that the respondents who had done more group works during school used more color varieties in their drawing (4-3-6). Creativity benefits from social interaction[4-44]. When there are group works, not only students collaborate with other students, but are also exposed to the concept of diverse learning and creativity as they are learning how to implement with each other.[4-45]

Additionally, from "4-3-4", it was concluded that subjects who had more creative activities at school used more number of color varieties, which is in line with other studies. Shapiro[4-46] suggests that the proper selection of classroom activities can create a positive classroom and enhance creativity.

Another question that subjects were asked was their parents' background – whether they have art or design background or not. From "4-3-10", it was observed that subjects whose parents have art and design background used more number of color varieties in their drawing compared to those who didn't. This result was seen in chapter two as well.

In addition, it was observed that foreigners used more number of color varieties compared to Japanese subjects. This was observed in chapter two as well.

Lastly, the influence of bedroom samples was observed (4-3-11), which further proves the reliability of the rest of the data and results. It was concluded that the respondents who saw black and white samples tended to use less number of color varieties in their second drawing, whereas subjects (both Japanese and foreigners) who saw colorful samples used more number of color varieties in the second drawing.

Moreover, from "4-3-12" and "4-3-13", it was observed that the respondents who saw colorful samples tended to use their favorite color (and patterns) in the second drawing more. On the contrary, after seeing black and white samples, subjects used their favorite color in the first drawing rather than the second one. It is interesting to add that after the experiment, there were some comments from the (Japanese) subjects that they have never used their favorite color in their bedroom (except in smaller objects) because they just didn't know how to use it; however after seeing the "bedroom samples", they would love to rearrange their bedroom and use their favorite color(s) in it. Comments like this were seen from 86.1% of the Japanese subjects.

It is better to mention that the correlation between categories ("4-3-1" to "4-3-11") was examined and it was observed that there is no clear correlation between them. In other words, a subject who had group works during school didn't necessarily see samples during childhood, or had creative activities, or went to art school and so on. However, a subject who had attended many of those "activities" in those categories (for example: went to art schools; was free to use colors and his/her imagination; had group works; did creative activities; saw samples, and others) had used more number of color varieties compared to someone who engaged in only 1 or 2 of those categories/activities.

Ultimately, from this study, it was concluded that both environment and arts creative education – during elementary and junior high school – have a positive significant correlation with color preference (Table 4-6). Moreover, the influence of interior color education on interior color preference was observed (Table 4-7).

Table 4-6. Influence of creative art education *Note: * (P<0.05); **(P<0.01)*

	Environment		Creative Art Education							
	House	School	Using Imagination	Creative Activities	Seeing Samples	Group Works	Art Schools	Museums	Color Pencils	Parents' BG
Japanese	*	*	*	*	*	**	**	*	*	*
Foreigners	*	*	**	*	*	**	*	*	*	*

Table 4-7. Influence of samples

	Samples	
	Colorful	Black and White
Japanese	**	**
Foreigners	**	**

This research was approved by the Research Ethics Committee of Faculty of Art and Design, University of Tsukuba before gathering the data.

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CHAPTER FIVE

Conclusions

5-1. Discussion and Conclusions

In chapter one, a brief introduction to role of color in architecture (throughout history) was discussed, and it was observed that since the 80s color has become a key aspect of architecture in order to bring architecture closer to common public. Based on this, meanings of colors across different cultures, and color preferences studies (across cultures and demographics) were discussed. It was observed that studies being conducted across cultures only focus on cultural values. Additionally, studies concerning color preferences and ages are mainly done among younger ages and only focus on differences among ages. It was further observed that studies concerning color preferences among genders mainly focus on gender differences and hardly evaluate other aspects.

In conclusion, it was observed that these studies do not conclude if other factors such as social environment influence color preference. Based on these observations and conclusions, the purpose of this research was to take these studies further and identify some of the factors influencing interior color preference.

In order to reach the purpose of this study, social environment was taken as a primary focus and the influences of a person's residential, regional and educational backgrounds were examined. This was done among Iranian students living in Iran (N=94), Japanese students living in Japan (N=115), and foreign students living in Japan (N=92) using 2 drawings: (1. bedroom, 2. exterior of a few houses). The results of this experiment are discussed in chapter two; however, it was observed that arts education has a strong positive correlation with interior color preference.

One reason for using drawings was to see if the respondents will get creative in the drawings and use different patterns. It was observed that Iranian subjects used the most patterns in the walls of their bedroom drawing ($P<0.05$), and Japanese subjects used patterns the least. Kaplan and Kaplan[5-1] (1982) argue that familiarity influences color preference. In Iran, the usage of different kinds of wall papers has recently become really popular. The same thing can be seen in some parts of Europe and North America, where

some of the subjects of this study were from. Aside from having a good arts education, "familiarity" with wallpapers in subjects' daily life could be a reason that the subjects tried to use different patterns in their bedroom.

Furthermore, it was observed that 100% of the Iranians, 97.4% of the Japanese, and 96.8% of the foreigners used their favorite colors in the drawings. However, only 20.4% of the Japanese subjects used their favorite colors in (bedroom) walls, while more than half of the Iranians (56.4%) and foreign subjects (58.2%) used their favorite color in the walls. It can be argued that compared to Japanese subjects, the Iranian and foreign subjects were more familiar with using colors in interior (bedroom) walls. Additionally, foreigners (and Iranians) used more color varieties compared to Japanese subjects ($P<0.05$).

Overall, it was observed that among the case studies (regional, educational, and residential), arts education has a strong positive correlation with color preference ($P<0.01$). With more hours of arts education (during elementary, junior and senior high school), subjects used more color varieties in their drawings. This was seen among all of the subjects: Iranians, Japanese and foreigners (Figure 5-1). Moreover, subjects whom were art and design majored used more color varieties in their drawings ($P<0.05$), which further proves the importance of arts education on interior color preference.

[Figure 5-1 is originally discussed in chapter two: 2-3-5: page 82, Figure 2-9]

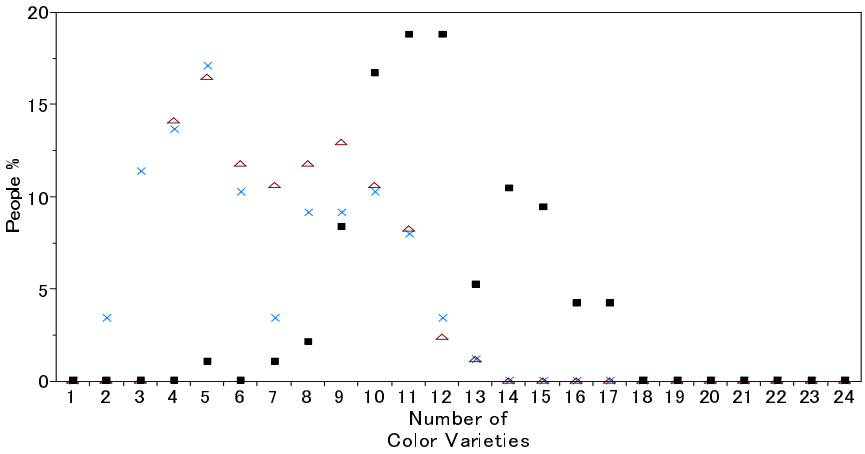

Figure 5-1. Education and number of color varieties for the data as a whole (Iranians, Japanese, and Foreigners)

Although, overall, it was observed that arts education has a significant positive correlation with color preference ($P<0.01$); however, looking at the differences between foreigners (including Iranians) and Japanese – foreigners (and Iranians) used more color varieties compared to Japanese subjects ($P<0.05$) – it can be argued that familiarity, culture, color-history, and color rituals (as discussed in chapter one) could play an important role in interior color preference as well.

Based on the findings of chapter two, in chapter three, I focused on creativity, teaching creativity and arts creative education. It was observed that creativity is not a "gift" and it can be learned in a supportive environment. Teachers can encourage their students to learn creativity and can create a (supportive) environment for their students by doing classroom activities, communication, having a good relationship with the students, giving students freedom of choice, group works, and others.

Moreover, it was observed that creativity and arts education are inseparable and arts education or artistic education can be considered as an important area for the development of creativity. In arts education, teachers can give the students more freedom of choice rather than using an example which everyone has to follow.

Based on the results of previous chapters, in chapter four, I wanted to clearly (1) identify and investigate the correlation between arts creative education and interior color preference. Additionally, (2) the influence of bedroom pictures' samples was investigated.

Same as chapter two, this was done between Japanese students and foreign students living in Japan (Tsukuba). The method was consisted of a bedroom drawing (same drawing as chapter two); bedroom pictures samples (colorful bedroom pictures were randomly shown to half of the subjects, black and white bedroom pictures were shown to the other half); and a questionnaire regarding the education the subjects received in elementary and junior high school. These questions were mainly designed based on the findings of chapter three.

From this study, the influence of bedroom pictures' samples was clearly observed.

Subjects (both Japanese and foreigners) who saw colorful bedroom pictures used more color varieties in their second drawing (P<0.05) (Figure 5-2). On the contrary, subjects who saw black and white bedroom pictures used less number of color varieties in their second drawing (P<0.05) (Figure 5-3). In other words, subjects tended to use more color varieties in their interior after seeing colorful bedroom pictures; and they used more black and white and less colors after seeing black and white bedroom pictures. [Figure 5-2 and Figure 5-3 were originally discussed in chapter four: pp. 149-150.]

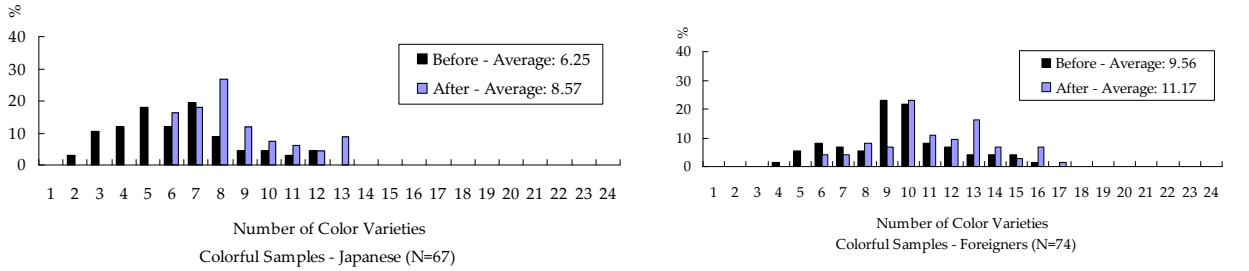

Figure 5-2. Influence of colorful samples on the subjects

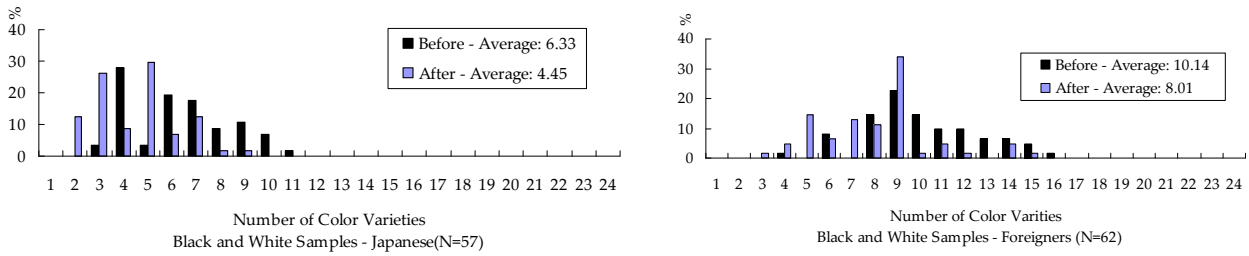

Figure 5-3. Influence of black and white samples on the subjects

Moreover, it was observed that subjects who saw colorful bedroom pictures used their favorite color in the second drawing more (prior to seeing colorful bedroom pictures samples, the subjects mainly used their favorite color in the smaller objects of their bedroom or didn't use their favorite color at all). There was a comment from a Japanese subject who saw colorful samples saying: "his favorite color is purple and he wanted to use it in a wider range in his bedroom (especially the walls), but he had no idea how to do so. However, after seeing colorful pictures, he got many ideas on how to use his favorite color (purple) in his bedroom walls (and in a wider range), and he added that he cannot wait to

use it in his "*real life*" bedroom". Actually, 86.1% of the subjects wrote similar comments as how they have learned to use colors, especially their favorite color(s), in their interior after seeing colorful bedroom pictures.

It was further observed that respondents tended to use more patterns in their second drawing. This was because the bedroom samples had patterns either in bed, on the floor, on the walls or others, and the respondents were clearly influenced by those patterns as well, and not just by the colors and color-usage.

Let's mention that all these changes – more color usage, usage of more patterns and favorite colors – were observed by just 5 minutes of showing bedroom picture samples. Therefore, it can be argued that if these subjects had seen more samples from childhood, then, they would be more familiar with colors and they would be able to use colors more freely in their interior at older ages. Here let's mention that, although, drawings were used; however, when doing the experiment, not only the bedroom drawing was as detailed as possible (making it look like a real bedroom), but it was additionally made sure that the subjects don't look at the drawings as just drawings, but consider the drawing as a real bedroom and color it out according to their preference. Moreover, based on the comments left at the end of the experiment (in the questionnaire), it was further observed that the respondents did consider the drawing as a bedroom they would want.

In addition to previous results, the strong significant correlation between creative arts education – during elementary and junior high school – and color preference was observed. It was observed that group works ($P<0.01$), creative activities ($P<0.05$), being able to draw/imagine freely ($P<0.05$), seeing samples during childhood ($P<0.05$), visiting museums ($P<0.05$) and going to art schools ($P<0.05$) all had a positive correlation with number of color varieties. Some of these elements were discussed in chapter three. They are the elements of creative teaching and elements to boosting and enhancing creativity in the students.

Overall, from this research, the positive significant correlation between creative education (and arts education) and interior color preference was observed. In addition, the

influence of bedroom pictures' samples was observed. It was observed that subjects who saw colorful bedroom pictures, were able to use colors (specifically, their color preferences – favorite colors) in their interior more. Therefore, although, the bedroom pictures were only shown for 5 minutes to the subjects; however, from the results of chapter three and chapter four, it can be argued that showing pictures' samples can be considered as part of creative education.

In addition, it needs to be mentioned that this study only focuses on a section of education; particularly, the arts education discussed in the questionnaires, which are as following:

- Hours of arts education (Drawing, Paintings, Art Camps, etc)
- Using colors and imagination freely
- Creative activities
- Seeing samples
- Group works
- Going to art schools and museums

Therefore, it can be argued that in conclusion, from this study, it was observed that education [the section of arts education discussed in this study] during childhood can have an influence on interior color preference. In addition, it can be discussed that there is a possibility that interior color education during adulthood can have an impact on interior color preference as well.

5-2. Achievements

From this study, it was concluded that by doing the right education, people will get to know colors more. If there is such a big change in terms of colors and color usage (specifically being more capable of color-preference-usage or favorite-color-usage) in interior by just 5 minutes of interior color education, therefore, it can be assumed that with a better continued education, people will get to know colors more and can use colors more

freely in their interior.

When people get to know colors more, they will be able to use them more freely and therefore, there will be more varieties; hence, there will be no more preconceived ideas that lead to standardization. Having more varieties invents more creative, innovative, original and new ideas, and therefore it helps with societal and cultural growth.

Moreover, when people have more knowledge towards colors, therefore, designers will be able to use colors more freely as well.

Furthermore, in regards to color preferences studies, no other color preference study has examined influences of social environment, and definitely not education on color preference. Other studies have brought up education as a possible influence on color preference, however they did not examine further, and they have been mainly focused on cultural and historical values. This study is taken one step further, and the influence of interior color education is clearly identified; additionally, the correlation between arts creative education and interior color preference is further identified.

5-3. Further Studies

This study was mainly focused on social environment, and education (arts education, and creative arts education). However as discussed in chapter one, culture can play an important role.

Moreover, in terms of creativity, there could be other elements such as society and family environment[5-2~5-11] influencing students' creativities which were not discussed in this study. Additionally, other researchers[5-12~5-21] suggest that there are barriers such as personality characteristics, intellectual capacities and social arrangements standing between the individuals and creativity. However, because of the purpose of this research and the lack of researches on relationship between (creative arts) education and interior color preference, this study was mainly only focused on the influences of education; although, it would be interesting to value those aspects and barriers in further studies as well.

In addition, although from this research, it is observed that arts education has influence on interior color preference; however, as discussed, only a section of arts education was evaluated and analyzed, which was about the arts education received during childhood. Moreover, this was studied through a questionnaire. This can further be evaluated by focusing more on education and doing more experiments regarding education, arts education, and other aspects of education both in childhood and adulthood.

Moreover, although in Chapter One and Chapter Two of this study, there is an introduction to other architects' and researchers' works and designs; however, the respondents of this study are university students. Additionally, their background is being judged by questionnaires and I have relied on their answers. The background of the subjects can be judged more realistically in the future; for example, the same subjects can participate in this study for a few continuous years (while examining different methods and aspects of arts education).

Furthermore, this study was done only in Japan and Iran, and although, it is assumed that the same results will be observed in other countries as well; however, having the chance, it would be interesting to see the outcomes of this study done in a bigger scale and in other countries and cultures – for example very colorful cultures and countries like Latin America, or in Nordic countries where the weather plays an important role in the selection of colors.

The results can further be analyzed in terms of color emotion, for example which group prefers warm colors or etcetera. Moreover, there was a section in the questionnaire where subjects were free to write any color they wanted as their favorite color. Color naming is very different in different cultures and it would be interesting to evaluate that in future studies as well.

In addition, from this study, more usage of colors, specifically more usage of favorite colors was observed. These results can be analyzed in terms of color harmony in future studies.

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CHAPTER TWO: Personal Background and Color Preference

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APPENDIX

Appendix I

この二つの絵を渡してある 24 色の色鉛筆で塗ってください。
塗った後に、絵と色鉛筆を回収します。

次の絵を自分の部屋だと想像して、好きな様に塗ってください。
Consider this drawing as a bedroom you would want to have and please, paint it out according to your preference with the color pencils provided.

Age・年齢: ☐Under 20 ☐Between 20 to 30 ☐Above 30

Sex・性別: ☐F ☐M

Nationality・国籍:

Major・専攻:

次の絵を自分の街だと思って、矢印がある建物を自分の家だと想像して、絵全体を好きな様に塗ってください。

Please, paint out this drawing with the color pencils provided.

Make sure that you draw it the way you would like to see it – independent of the location. Also, consider the house with the "arrow sign" as your own house.

Age・年齢: ☐Under 20 ☐Between 20 to 30 ☐Above 30

Sex・性別: ☐F ☐M

Nationality・国籍:

Major・専攻:

二つの絵を塗り終わったら、絵と色鉛筆を回収します。
次に、アンケートをお答えください。

The Questionnaire

The content of this survey and any information obtained will remain confidential. It will be used solely for academic purposes; hence your participation is invaluable for the success of this study.

Please make sure to answer the questions on both sides of the pages.
Thank You.

Age: ☐Under 20 ☐Between 20 to 30 ☐Above 30
Sex: ☐F ☐M
Nationality:
Major:

City/Country/Home-town Background

1. Which country/ies have you lived before?
   Please fill in the table below including the ages (*approximate number is fine*) that you have lived in those countries.

Example	Country (Example)	Age (Example)
Country 1	US	0 to 10 yrs old
Country 2	Iran	10 to 20 yrs old
Country 3	Japan	20 to 30 yrs old

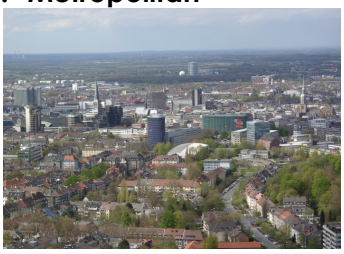
	Country	Age
Country 1		
Country 2		
Country 3		
Country 4		
Country 5		

2. Please fill in the table below with the cities you have previously lived in. In addition, from the following categories (A to D), please indicate the region that best describes the environmental surroundings in which you were raised.

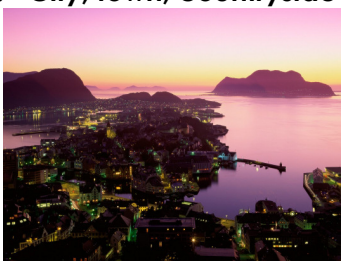
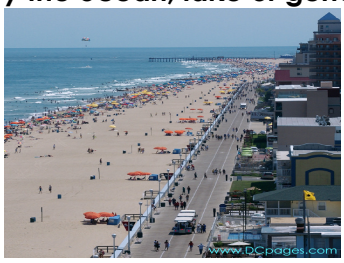
Example	City/town(Ex.)	Age (Example)	Type (Example)
City 1	LA	0 to 10 yrs old	A(Metropolitan)
City 2	Tehran	10 to 20 yrs old	A(Metropolitan)
City 4	Tsukuba	21 to 30 yrs old	C(By the Mountains)

	City	Age	Type
City 1			
City 2			
City 3			
City 4			
City 5			

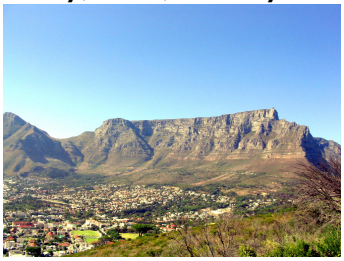
A. Metropolitan




B. City, town, countryside by the ocean, lake or generally water

C. City, town, countryside by the mountain




D. Others (please specify)

Educational Background

3. In your pre-school, did you have any art-related classes? [For example drawing, painting, art camps, visiting art galleries and etc…]
   - ☐ Yes – Please specify the subject and the number of hours per week/month:
     - ☐ Drawing – How many hours a week? .....
     - ☐ Painting – How many hours a week? .....
     - ☐ Art camps – How many times a week/month/year? .....
     - ☐ Wood-cut prints – How many hours a week? .....
     - ☐ Visiting art galleries – How many times a week/month/year? .....
     - ☐ Others (Please Specify:)
   - ☐ No
   - ☐ Don't remember
   - ☐ Others ( )

4. In your elementary school, did you have any art-related classes? [For example drawing, painting, art camps, visiting art galleries and etc…]
   - ☐ Yes – Please specify the subject and the number of hours per week/month:
     - ☐ Drawing – How many hours a week? .....
     - ☐ Painting – How many hours a week? .....
     - ☐ Art camps – How many times a week/month/year? .....
     - ☐ Wood-cut prints – How many hours a week? .....
     - ☐ Visiting art galleries – How many times a week/month/year? .....
     - ☐ Others (Please Specify:)
   - ☐ No
   - ☐ Don't remember
   - ☐ Others ( )

5. In your junior high school, did you have any art-related classes? [For example drawing, painting, art camps, visiting art galleries and etc…]
   - ☐ Yes – Please specify the subject and the number of hours per week/month:
     - ☐ Drawing – How many hours a week? ….....
     - ☐ Painting – How many hours a week? .....
     - ☐ Art camps – How many times a week/month? .....
     - ☐ Wood-cut prints – How many hours a week? .....
     - ☐ Visiting art galleries – How many times a week/month/year? .....
     - ☐ Others (Please Specify:)
   - ☐ No
   - ☐ Don't remember
   - ☐ Didn't go to one
   - ☐ Others ( )

6. In your senior high school, did you have any art-related classes? [For example drawing, painting, art camps, art media, visiting art galleries and etc…]
   - ☐ Yes – Please specify the subject and the number of hours per week/month:
     - ☐ Drawing – How many hours a week? .....
     - ☐ Painting – How many hours a week? .....
     - ☐ Art camps – How many times a week/month/year? .....
     - ☐ Wood-cut prints – How many hours a week? .....
     - ☐ Visiting art galleries – How many times a week/month/year? .....
     - ☐ Others (Please Specify:)
   - ☐ No
   - ☐ Don't remember
   - ☐ Others ( )

7. In your country, did you ever go to any "international schools"?
   ☐ Yes ☐No
   If you answered no, please go to question 8.
   In case you answered yes, please specify the age(s) and the place(s) [or cities] you went to that school.
   Age(s): _____
   City(ies): _____

Residential Background (These questions are meant to be for the house you lived in before coming to Japan**)**

8. What was the main color of the **interior** walls in your entire house? What about the **exterior** walls? [In case you have lived in different houses, please include all with the ages you have lived in those houses – approximate number is fine]

Example	Age (example)	The color of Interior walls(Ex.)	The color of Exterior walls(Ex.)
House 1	0 to 12 years old	Beige	Bricks
House 2	12 to 22 years old	Beige	Dark Green (Stone)

	Age	The color of Interior walls	The color of Exterior walls
House 1			
House 2			
House 3			
House 4			
House 5			

9. In the city(cities) you lived in, were there any regulations regarding color in exterior? ☐No ☐Yes

   If you answered yes, please specify: _____

_____

10. In your house, did you have your own bedroom? ☐Yes ☐No

    If you answered yes, what color was the main color of your bedroom walls? Please fill in the table below. In case, you have lived in different houses, please include all.

Example	Main color of bedroom walls(Ex.)
House 1	Light Pink
House 2	Beige

	Main color of bedroom walls
House 1	
House 2	
House 3	
House 4	
House 5	

11. Did you have anything(s) very colorful in your house that you really liked?

    What were they? _____

    What color were they? _____

12. What is your favorite color? _____

    Did you use this color in any of the 2 drawings earlier?

    ☐ Yes – In case you said yes, please proceed to question 12.

    ☐ No – If you answered No, please say why you didn't use this color in your paintings. _____

    _____

13. Do your parents have any art-design-related background? ☐Yes ☐No

14. Furthermore, if you have any comments regarding color in interior design or color in general, please include here. _____

_____

Thank you again for taking the time to fill out this questionnaire.

Mahshid

アンケートは表裏の両面にありますので、よろしくお願いします。

アンケート

あてはまるものの□にチェックを、または表や下線、[　]に記入してください。

住んできた所

１．今まで住んできた国を、例を参考しながら、次の表にご記入ください。住んできた国が複数ある場合は何歳から何歳まで住んでいたかも合わせてご記入ください。

例

	国	年齢
国 1	US	0 から 10 歳まで
国 2	Iran	10 歳から 20 歳
国 3	Japan	20 歳から 30

回答欄

	国	年齢
国 1		
国 2		
国 3		
国 4		
国 5		

ご記入が終わったら、裏のページへ進んでください。

２．今まで住んできた都市・町を次の表にご記入ください。住んできた場所はカテゴリ A から D のどれに当てはまると思いますか？それもあわせてご記入ください。(カテゴリの説明に写真を例として示します。それを見て答えてください。)

例

	都市･町	年齢	Type
都市 1	LA	0 から 10 歳まで	A(Metropolitan)
都市 2	Tehran	10 歳から 20 歳	A(Metropolitan)
都市 3	茨城県つくば市	20 歳から30歳	C(山に近い)

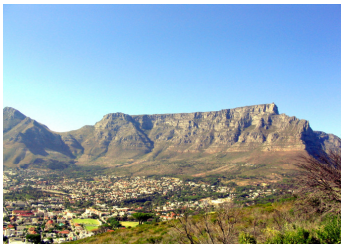
回答欄

	都市･町	年齢	Type
都市 1	県･都･府･道　　市		
都市 2	県･都･府･道　　市		
都市 3	県･都･府･道　　市		
都市 4	県･都･府･道　　市		
都市 5	県･都･府･道　　市		

A. Metropolitan


B. 海洋、海、池などに近い都市


C．山に近い都市




D.　その他

教育 [あなたのご自身の教育について教えてください]

３．幼稚園の時は美術または図画工作の時間がありましたか？[たとえば絵、素描を書いたり、美術館見に行ったりなど。]

□ はい

どのような内容でしたか：

□絵画　週に何時間？　……

□版画　週に何時間？　……

□素描　週に何時間？　……

□その他　（　　）

□ いいえ

□ 覚えていません

□ 幼稚園に通ったことがありません

□ その他　（　　）

４．小学校の時は美術または図画工作の時間がありましたか？[たとえば絵、素描を書いたり、美術館見に行ったりなど。]

□ はい

どのような内容でしたか：

□絵画　週に何時間？　……

□版画　週に何時間？　……

□素描　週に何時間？　……

□その他　（　　）

□ いいえ

□ 覚えていません

□ その他　（　　）

５．中学校の時は美術または図画工作の時間がありましたか？[たとえば絵、素描を書いたり、美術館見に行ったりなど。]

□ はい

どのような内容でしたか：

□絵画　週に何時間？　……

□版画　週に何時間？　……

□素描　週に何時間？　……

□その他　（　　）

□ いいえ

□ 覚えていません

□ その他　（　　）

６．高校の時は美術または図画工作の時間がありましたか？[たとえば絵、素描を書いたり、美術館見に行ったりなど。]

□ はい

どのような内容でしたか：

□絵画　週に何時間？　……...

□版画　週に何時間？　……

□素描　週に何時間？　……

□その他　（　　）

□ いいえ

□ 覚えていません

□ その他　（　　）

７．“International School”に通ったことがありますか？

□はい　　□いいえ　[いいえの場合は質問８へ]

はいと答えた場合は学校の場所と通っていた時期を教えてください。

“International School”の場所（都市）：……

通っていた時期：……

住んできた家 [住んできた家についてお答えください]

８．住んできた家は以下のどの要素がありますか？複数選んでもかまいません。住んできた家が複数ある場合は何歳から何歳まで住んでいたかも合わせて[例の表を参考しながら]表にご記入ください。

① たたみ
② 障子
③ ふすま
④ 床の間
⑤ 茶の間
⑥ 寝室
⑦ 日本庭園
⑧ 押入れ
⑨ フローリング
⑩ ドア
⑪ ダイニングルーム
⑫ リビングルーム
⑬ ベッドルーム
⑭ 中庭・ガーデニング
⑮ クロゼット
⑯ その他

例	歳	要素[上記①～⑯でお答えください。]
家1	0 歳から15歳まで	①④⑦⑧
家2	15 歳から25歳まで	⑩⑪⑫⑬⑮

回答欄	歳	要素[上記①～⑯でお答えください。]
家1	__ 歳から __ 歳まで	
家2	__ 歳から __ 歳まで	
家3	__ 歳から __ 歳まで	
家 4	__ 歳から __ 歳まで	
家 5	__ 歳から __ 歳まで	

９．家の**中**の壁と**外**の壁でもっとも多い色は何色ですか？住んできた家が 2 軒以上ある場合はそれぞれをお答えください。

	中の壁のもっとも多い色	**外の壁のもっとも多い色**
家 1		
家 2		
家 3		
家 4		
家 5		

１０．　家の中にカラフルかつお気に入りの物・家具はありますか？ □ある　□ない
それは何ですか？何色ですか？

何が　；　**何色**

[　　；　　]
[　　；　　]
[　　；　　]
[　　；　　]

１１．　住んできた家に自分の部屋はありましたか？ □はい　□いいえ
はいと答えた場合は、部屋の壁の色は何色でしたか？ _____

１２．　あなたの一番好きな色は何色ですか？ _____
その色をさきほど塗った絵に使いましたか？ □はい　□いいえ
使っていない場合は理由を書いてください。_____
_____

１３．　あなたの両親は美術または芸術に携わっていますか？ □はい　□いいえ

１４．　インテリアデザインと色彩に対して意見や気付いたことなどがあればご記入ください。_____
_____
_____

年齢：　□20 歳未満　　□20 歳から 30 歳　　□30 歳以上
性別：　□女性　　□男性
国籍：
専攻：

以上でアンケートは終わりです。ありがとうございました。

Appendix IV

次の絵を自分の部屋だと想像して、渡してある 24 色の色鉛筆で好きな様に塗ってください。塗った後に、絵と色鉛筆を回収します。

Consider this drawing as a bedroom you would want to have and please, paint it out according to your preference with the color pencils provided.

アンケート – グループ 1

あてはまるものの□にチェックを、または表や下線、[　]に記入してください。

性別：　□女性　　□男性

国籍：

専攻：

Part I.　[住んできた環境・家についてお答えください]

1. 住んできた家に自分の部屋はありましたか？　□はい　　□いいえ
   はいと答えた場合は部屋の壁の色は何色でしたか？ _____

2. 住んできた環境はカラフルでしたか？
   □いいえ
   □はい、カラフルな外壁
   □はい、カラフルなインテリア

3. あなたの一番好きな色は何ですか？ _____

Part II.　[子供の時、または小学校・中学校の教育について教えてください]

4. 学校での授業では、好きな色を自由に塗ることはできましたか?
   □はい
   □覚えていません
   □いいえ　(具体例: _____)

5. 学校では、図画工作、または美術の時間で先生はあなたに自由に制作させていましたか?
   □はい、自由にさせてくれました。
   □先生はもっと私に想像してみなさいと指導しました。
   □いいえ、先生はもっと私に現実的な色を使いなさいと指導しました。
   □いいえ、先生はもっと私に現実的なものを描きなさいと指導しました。
   □覚えていません。
   □その他　(_____)

6. 描く時はいろいろな色を使っていましたか?
   □はい　⟶　(具体的に教えてください　□0~7 色　　□8~14 色　　□15 以上の色)
   □いいえ
   □覚えていません。

7. 子供の時にいろいろなサンプルを見たことがありましたか?

□いいえ (いいえの場合は質問 9 へ)

□覚えていません

□はい

どのような内容のサンプルを見ましたか? (複数選んでも OK)また、その頻度はどのくらいでしたか? 例を参考にしながら、表の中の当てはまるところに“○”や“ー”を入れてください。

		週に 2 回以上	週に 1 回	月に 2 回以上	月に 1 回	2 ヶ月に 1 回	何ヶ月ごとに 1 回	年に 1 回	その他 (_____)
例	ファッション		○						
	写真	ー	ー	ー	ー	ー	ー	ー	ー
解答欄	建築とインテリア								
	ファッション								
	プロダクト								
	美術								
	クラフト								
	写真								
	書道								
	その他 (_____)								

← 全然やっていない場合

8. 質問 7 で、はいと答えた場合は、そのサンプルをどこで見ましたか? (複数選んでも OK)

□学校 □雑誌 □ビデオ □本 □テレビ □写真

□パソコン・インターネット □その他(_____)

9. 学校以外に美術学校に行ったことがありましたか?

□はい (その内容を教えてください・複数選んでも OK)

□素描 □絵画 □写真術 □アートキャンプ □書道

□その他 (_____)

□いいえ

□覚えていません

10. 他の生徒・先生たちと美術館へ行っていましたか?

□はい (はいと答えた場合は**1 年間**で何回行ったかを教えてください。)

□ 1 回 □ 2～6 回 □ 7～11 回 □12 回以上

□いいえ

□覚えていません

11. 学校では、創造的なことをやっていましたか？

□はい

その**内容**、および**1年間**で、何回行ったかを教えてください。かっこの中の
当てはまるところにチェックを入れてください。

□ポスター作り　（□1~5回　□6~10回　□11~15回　□16回以上）
□マスク作り　（□1~5回　□6~10回　□11~15回　□16回以上）
□本作り　（□1~5回　□6~10回　□11~15回　□16回以上）
□カード作り　（□1~5回　□6~10回　□11~15回　□16回以上）
□フェイスペインティング　（□1~5回　□6~10回　□11~15回　□16回以上）
□指人形作り　（□1~5回　□6~10回　□11~15回　□16回以上）
□アートビデオ作り　（□1~5回　□6~10回　□11~15回　□16回以上）
□使い捨てのコップ・皿に描画　(□1~5回　□6~10回　□11~15回　□16回以上）
□作品を見ながら、話し合い　（□1~5回　□6~10回　□11~15回　□16回以上）
□スタンプ作り　（□1~5回　□6~10回　□11~15回　□16回以上）
□その他　（_____）

□いいえ

□覚えていません

12. 他の学生とグループワークを頻繁にやりましたか？

□はい　（どんなことでしたか：_____）

□いいえ

□覚えていません

13. 学校の施設ではいろいろな色を使っていましたか？(例えば外壁・インテリア・家具)

□はい　（教えてください）

□小学校
□中学校
□高校

□いいえ

□覚えていません

14. あなたの両親は美術または芸術に携わっていますか？ □はい　□いいえ

最後に、インテリアデザインと色彩に関して意見や気付いたことなどがあればご記入ください。

_____

_____

_____

以上でアンケートは終わりです。

Questionnaire – Group 1

There are 15 questions in total. Please, make sure to answer all the questions. In case you have any questions, please do not hesitate to ask.
Thank you for your co-operation.

Gender: ☐Female ☐Male

Nationality:

Major:

Part I. (For foreign students, these questions apply to the time before you came to Japan)

1. Did you have your own bedroom? ☐Yes ☐No

2. In case you answered yes to question 1, what were the colors of your bedroom walls?

3. Did you live in a colorful area/neighborhood?
   - ☐ No
   - ☐ Yes, colorful exteriors
   - ☐ Yes, colorful interiors

4. What is your favorite color?

Part II. (These questions are concerning your childhood and the education you received during elementary school and junior high school)

5. During your childhood, were you able to draw/paint freely?
   - ☐ Yes
   - ☐ Don't remember
   - ☐ No (Please explain:……..)

6. In your school, did your teacher try to step in, and ask you to correct the colors you have used in your drawing?
   - ☐ No, my teacher would let me use colors freely even if they weren't the right/suitable colors
   - ☐ No, my teacher would encourage me to use my imagination more
   - ☐ Yes, my teacher would ask me to use more realistic colors
   - ☐ Yes, my teacher would ask me to draw more realistic things
   - ☐ Don't remember
   - ☐ Others (Please specify :……..……..)

7. Did you use a lot of colors in your paintings?
   - ☐ Yes (Please select the number of colors: ☐0~7Colors ☐8~14Colors ☐More than 15)
   - ☐ No
   - ☐ Don't remember

8. During your childhood, were you shown many different samples?

☐ No (please proceed to question 10)

☐ Don't remember

☐ Yes – Please specify how often you saw those samples in the following table. (For example, if you used to look at fashion samples once a week, just put ○ in the appropriate place (under once a week) as shown in the example. In case you never used to see the indicated sample, just put **X** in front of it.)

		More than once a week	Once a week	More than once a month	Once a month	Once every 2 months	Once every few months	Once a year	Others (_____)
Example	Fashion		○						
	Photography	x	x	x	x	x	x	x	x
Your Answers	Architecture and Interior								
	Fashion								
	Products								
	Art								
	Craft								
	Photography								
	Calligraphy								
	Others (_____)								

9. In case you answered yes to question 8, where did you see those samples? **(Check all that apply)**

☐At School ☐Magazines ☐Videos ☐Books ☐Television

☐Computer and internet ☐Pictures

☐Others (Please specify:……..……)

10. Aside from your school, did you go to any art schools?

☐ Yes – Please specify what kind of school **(Check all that apply)**

☐Drawing ☐Painting ☐Photography ☐Art Camps ☐Calligraphy

☐Others (Please specify: …….)

☐ No

☐ Don't remember

11. Did you visit any museums with your school and teachers?

☐Yes – Please specify how many times a **year**

☐Once (a year) ☐2~6 times (a year) ☐7~11 times (a year) ☐More than 12 times (a year)

☐No

☐Don't remember

12. Did you do any creative activity at school?

☐ Yes – Please specify: **(Check all that apply)** Furthermore, please specify **how many times a year** you did these activities

☐Making posters/billboards (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Making masks (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Creating art books (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Making holiday cards (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Face painting (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Making puppets (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Making Art videos (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Looking at paintings and discussing them (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Drawings on disposable paper cups/plates, etc (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Making Stamps (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Others (Please Specify: …….)

☐ No

☐ Don't remember

13. Did you do any group works with other kids at the school?

☐ Yes (Please Specify: …….)

☐ No

☐ Don't remember

14. Were there many colors used in your school? (I.e. in interior walls, exterior walls, objects, furniture, etc)

☐ Yes – Please Specify **(Check all that apply)**

☐Elementary School

☐Junior High School

☐Senior High School

☐ No

☐ Don't remember

15. Do your parents have any art/design background? ☐Yes ☐No

Furthermore, if you have any comments about color in interior design, or color in general, please include here.

_____

_____

_____

Thank you for taking the time to participate in this survey.

Questionnaire – Group 2

There are 16 questions in total. Please, make sure to answer all the questions. In case you have any questions, please do not hesitate to ask. Thank You for your co-operation.

Gender: ☐Female ☐Male

Nationality:

Major:

Part I. (For foreign students, these questions apply to the time <u>before you came to Japan</u>)

1. Did you have your own bedroom? ☐Yes ☐No

2. In case you answered yes to question 1, what were the colors of your bedroom walls?

3. After seeing the samples, do you wish to use more colors in your interior?
   - ☐ Yes
   - ☐ No (Please specify the reason: ……...
     ……)

4. Did you live in a colorful area/neighborhood?
   - ☐ No
   - ☐ Yes, colorful exteriors
   - ☐ Yes, colorful interiors

5. What is your favorite color?

Part II. (These questions are concerning your childhood and the education you received during elementary school and junior high school)

6. During your childhood, were you able to draw/paint freely?
   - ☐Yes
   - ☐Don't remember
   - ☐No (Please explain:……..)

7. In your school, did your teacher try to step in, and ask you to correct the colors you have used in your drawing?
   - ☐No, my teacher would let me use colors freely even if they weren't the right/suitable colors
   - ☐No, my teacher would encourage me to use my imagination more
   - ☐Yes, my teacher would ask me to use more realistic colors
   - ☐Yes, my teacher would ask me to draw more realistic things
   - ☐Don't remember
   - ☐Others (Please specify:……..……..)

8. Did you use a lot of colors in your paintings?

☐ Yes (Please select the number of colors: ☐0~7Colors ☐8~14Colors ☐More than 15)

☐ No

☐ Don't remember

9. During your childhood, were you shown many different samples?

☐ No (please proceed to question 11)

☐ Don't remember

☐ Yes – Please specify how often you saw those samples in the following table. (For example, if you used to look at fashion samples once a week, just put ○ in the appropriate place (under once a week) as shown in the example. In case you never used to see the indicated sample, just put **X** in front of it.)

		More than once a week	Once a week	More than once a month	Once a month	Once every 2 months	Once every few months	Once a year	Others (_____)
Example	Fashion		○						
	Photography	x	x	x	x	x	x	x	x
Your Answers	Architecture and Interior								
	Fashion								
	Products								
	Art								
	Craft								
	Photography								
	Calligraphy								
	Others (_____)								

10. In case you answered yes to question 9, where did you see those samples? **(Check all that apply)**

☐At School ☐Magazines ☐Videos ☐Books ☐Television

☐Computer and internet ☐Pictures

☐Others (Please specify:……...……)

11. Aside from your school, did you go to any art schools?

☐ Yes – Please specify what kind of school **(Check all that apply)**

☐Drawing ☐Painting ☐Photography ☐Art Camps ☐Calligraphy

☐Others (Please specify: …….)

☐ No

☐ Don't remember

12. Did you visit any museums with your school and teachers?

☐Yes – Please specify how many times a **year**

☐Once (a year) ☐2~6 times (a year) ☐7~11 times (a year) ☐More than 12 times (a year)

☐No

☐Don't remember

13. Did you do any creative activity at school?

☐ Yes – Please specify: **(Check all that apply)** Furthermore, please specify **how many times a year** you did these activities

☐Making posters/billboards (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Making masks (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Creating art books (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Making holiday cards (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Face painting (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Making puppets (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Making Art videos (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Looking at paintings and discussing them (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Drawings on disposable paper cups/plates, etc (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Making Stamps (☐1~5times ☐6~10times ☐11~15times ☐More than 16 times)

☐Others (Please Specify: …….)

☐ No

☐ Don't remember

14. Did you do any group works with other kids at the school?

☐ Yes (Please Specify: …….)

☐ No

☐ Don't remember

15. Were there many colors used in your school? (I.e. in interior walls, exterior walls, objects, furniture, etc)

☐ Yes – Please Specify **(Check all that apply)**

☐Elementary School

☐Junior High School

☐Senior High School

☐ No

☐ Don't remember

16. Do your parents have any art/design background? ☐Yes ☐No

Furthermore, if you have any comments about color in interior design, or color in general, please include here.

_____

_____

_____

Thank you for taking the time to participate in this survey.

アンケート – グループ 2

あてはまるものの□にチェックを、または表や下線、[　]に記入してください。

性別：　□女性　　□男性

国籍：

専攻：

Part I.　[住んできた環境・家についてお答えください]

1. 住んできた家に自分の部屋はありましたか？　□はい　　□いいえ
   はいと答えた場合は部屋の壁の色は何色でしたか？ _____

2. 住んできた環境はカラフルでしたか？
   □いいえ
   □はい、カラフルな外壁
   □はい、カラフルなインテリア

3. あなたの一番好きな色は何ですか？ _____

4. 10 分間のサンプルを見た後に、インテリアにもっと色を使いたくなりましたか？
   □はい
   □いいえ　(理由を書いてください _____
   _____)

Part II.　[子供の時、または小学校・中学校の教育について教えてください]

5. 学校での授業では、好きな色を自由に塗ることはできましたか？
   □はい
   □覚えていません
   □いいえ　(具体例: _____)

6. 学校では、図画工作、または美術の時間で先生はあなたに自由に制作させていましたか？
   □はい、自由にさせてくれました。
   □先生はもっと私に想像してみなさいと指導しました。
   □いいえ、先生はもっと私に現実的な色を使いなさいと指導しました。
   □いいえ、先生はもっと私に現実的なものを描きなさいと指導しました。
   □覚えていません。
   □その他　(_____)

7. 描く時はいろいろな色を使っていましたか？

□はい ⟶ （具体的に教えてください □0~7 色 □8~14 色 □15 以上の色）

□いいえ

□覚えていません

8. 子供の時にいろいろなサンプルを見たことがありましたか？

□いいえ (いいえの場合は質問 10 へ)

□覚えていません

□はい

どのような内容のサンプルを見ましたか？(複数選んでも OK)また、その頻度はどのくらいでしたか？例を参考にしながら、表の中の当てはまるところに“○”や“ー”を入れてください。

		週に 2 回以上	週に 1 回	月に 2 回以上	月に 1 回	2 ヶ月に 1 回	何ヶ月ごとに 1 回	年に 1 回	その他 (_____)
例	ファッション		○						
	写真	ー	ー	ー	ー	ー	ー	ー	ー
解答欄	建築とインテリア								
	ファッション								
	プロダクト								
	美術								
	クラフト								
	写真								
	書道								
	その他 (_____)								

← 全然やっていない場合

9. 質問 8 で、はいと答えた場合は、そのサンプルをどこで見ましたか？(複数選んでも OK)

□学校 □雑誌 □ビデオ □本 □テレビ □写真

□パソコン・インターネット □その他(_____)

10. 学校以外に美術学校に行ったことありましたか？

□はい (その内容を教えてください)

□素描 □絵画 □写真術 □アートキャンプ □書道

□その他 (_____)

□いいえ

□覚えていません

11. 他の生徒と先生たちと美術館へ行っていましたか？

□はい （はいと答えた場合は**1 年間**で何回行ったかを教えてください。）

□ 1 回 □ 2～6 回 □ 7～11 回 □12 回以上

□いいえ

□覚えていません

12. 学校では、創造的なことをやっていましたか？

□はい

その**内容**、および**1年間**で、何回行ったかを教えてください。かっこの中の
当てはまるところにチェックを入れてください。

□ポスター作り　(□1~5回　□6~10回　□11~15回　□16回以上)
□マスク作り　(□1~5回　□6~10回　□11~15回　□16回以上)
□本作り　(□1~5回　□6~10回　□11~15回　□16回以上)
□カード作り　(□1~5回　□6~10回　□11~15回　□16回以上)
□フェイスペインティング　(□1~5回　□6~10回　□11~15回　□16回以上)
□指人形作り　(□1~5回　□6~10回　□11~15回　□16回以上)
□アートビデオ作り　(□1~5回　□6~10回　□11~15回　□16回以上)
□使い捨てのコップ・皿に描画　(□1~5回　□6~10回　□11~15回　□16回以上)
□作品を見ながら、話し合い　(□1~5回　□6~10回　□11~15回　□16回以上)
□スタンプ作り　(□1~5回　□6~10回　□11~15回　□16回以上)
□その他　(_____)

□いいえ

□覚えていません

13. 他の学生とグループワークを頻繁にやりましたか？

□はい　(どんなことでしたか：_____)

□いいえ

□覚えていません

14. 学校の施設ではいろいろな色を使っていましたか？(例えば外壁・インテリア・家具)

□はい　(教えてください)

□小学校
□中学校
□高校

□いいえ

□覚えていません

15. あなたの両親は美術または芸術に携わっていますか？ □はい　□いいえ

最後に、インテリアデザインと色彩に関して意見や気付いたことなどがあればご記入ください。

_____

_____

_____

以上でアンケートは終わりです。