Evaluation and Preference about Interior Design Works

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Abstract—This is an empirical study applying the correlational research method to explore these issues. The main purpose of this study is to explore the relationships among variables of creativity evaluation, aesthetic judgment and visual preference. The color pictures of designed residential living rooms and hotel lobbies were used as the measuring instrument. The collected data of 416 samples were analyzed with SPSS software. The results include: 1. Subjects of different personal attributes differ significantly in some factors of creativity evaluation, aesthetic judgment and visual preference. 2. The variables of aesthetic, creativity and preference about lobby and living room are significantly related to each other. 3. The highest coefficient among three variables about lobby is aesthetic and creativity; as for living room, aesthetic and preference. 4. Multiple regression analysis about lobby reveals 7 predictive variables accounting for 52.1% of total explained variance, and the main variable is from creativity; as for living room, 7 predictive variables accounting for 59.3% of total explained variance, and the main variable is from aesthetic.

Keywords—Aesthetic Judgment; Creativity Evaluation; Interior Design; Visual Preference.

Abbreviations—Common Method Variance (CMV).

I. INTRODUCTION

One of the ultimate goals of interior design is to create a pleasant man-made environment. Therefore, it is essential for interior design work to offer a pleasant feeling which would later transform into preference. In addition to its fundamental functional requirement, creativity and aesthetics are the two most important key points of interior design work. However, what criteria or features do people use to evaluate the creativity and aesthetics of interior design works? Or, what attributes or features should interior design works possess that would please its users? What are the visual components that nurture creativity and aesthetic features of interior design works? What are the correlations between each visual component and preference? In addition, when it comes to evaluation of interior design works, will the professional-trained hold the same criteria and viewpoints as the nonprofessional people? And if not, what could be the possible differences? All the above-mentioned are critical to interior design related industry, education, teachers, and students, unfortunately, there is hardly any discussion or discourse on these regards.

Not only does the man-made environment should meet the functional needs, it should also satisfy its users’ psychological needs. In general, functional needs have a set of standardized and objective evaluation criteria. However, it is difficult to evaluate users’ psychological needs since the objective criteria seem missing. Components and elements of man-made interior environment are complex and diverse; hence, it is critical for all designers to utilize different elements and features to fully present the creativity and aesthetics of their works so that users’ psychological needs are satisfied. Nevertheless, creativity and aesthetics belong to psychological perceptions that are hard to observe. They can only be explained or described subjectively through objects, pictures, and written words. Regarding academic research, researchers should explore and analyze its context via effective survey or examination.

The followings show the main goals of this research.
1. To find out college students’ preferences about interior design work.
2. To compare and analyze differences of interior design work evaluation and preferences among college students with different attributes.
3. To discuss correlations among creativity evaluation, aesthetic judgment, and preferences.

II. LITERATURE REVIEWS

Evaluation and preference variables are the focus of this research. However, instead of bringing participants to the scene for on-site evaluation, this research adopts actual interior design pictures as the survey tools. As the function evaluation already has an objective set of criteria, this research tends to exclude it from the research scope.
Evaluation only focuses on creativity and aesthetics, and in order to distinguish the differences, they are named “creativity evaluation” and “aesthetic judgment” respectively. Preference is based on participants’ subjective visual point of view; hence, preference is named precisely as “visual preference”.

2.1. Creativity Evaluation
Creativity evaluation is classified into the following three categories: (a) input: as creators’ background and all attribute (including personality tendency); (b) course: including process, approaches, and events of utilizing creativity, and (c) output: as its creation product and its achievements [Mao et al., 2000]. These classifications indicate that creativity cannot be evaluated by standardizations that fit all. Recent theories and practice results prove that creativity being an idea of certain content. In other words, creative activity in one area is different and independent from other area [Cheng, 2003]. The evaluation of creativity evaluation on interior design work should be on output information. “Features or characteristics of its products”, “variation of content, format, and function”, and “consensual assessment” are the three major creativity indicators. Since the participants of this research include non-design or art related college students, “consensual assessment” is the ideal evaluation of interior design works. According to mentally-constructive implicit theories, no training is needed for everyone to judge the plain-to-see creativity of art products or works undoubtedly. Consensual assessment emphasizes on definitions in the real world.

2.2. Aesthetic Judgment
When it comes to aesthetics, researchers from all area accentuate on the following two aspects: (a) recognize and comprehend elements that trigger aesthetic or pleasure perception experience, and (b) understand human’s ability to create and appreciate the nature of ability to perform and create [Lang, 1987]. The research approaches regarding the two aspects are significantly different. The first one stresses on empirical theory, which can be classified as empirical aesthetics; while the later concentrates on norm theory, named as analytic aesthetics or speculative aesthetics. Most of the previous research studies relate to environment aesthetics are part of empirical aesthetics. As for empirical aesthetics study on environment, the author wants to know what environment component elements create pleasant perception. The most commonly used research method is correlational analysis of aesthetic experiences to examine correlations between two or more variables [Lang, 1987]. The correlational analysis uses format or structure feature (aesthetic factors) as independent variables, human’s subjective perception (aesthetic responses) of these format or structure as dependent variable, and personality attributes as observation variables. Aesthetic factor indicates physical environment elements that trigger our aesthetic responses through visual perception, i.e., format, color, proportion, material, texture, manner, style, and decoration, etc.

2.3. Visual Preference
Visual preference results from interaction between human and environment, which begins at environmental perception that triggers by certain environmental attributes. After recognition process and evaluation, it turns into preference response. Therefore, environmental attributes and environmental perception are the two key foundations to construct environmental preference. For environmental perception, though it includes vision, hearing, taste, smell, touch, and motion perception, etc., people rely heavily on their vision to receive outside stimulations and information which would later developed as preference and it can be classified as visual preference. Environmental attribute stands for components of physical environment perceived mainly by vision, i.e., facilities, equipment, signs, architecture structure, colors, proportion, material, texture, manner, shape, style, furniture, vegetation, and accessories, etc. When human senses receive these messages from environmental attributes, they tend to compare and evaluate them with previous experiences which would later develop into situational perception. Once the evaluation turns out to be positive, preferences emerge. Since the overall process relates to individual’s experience and state of mind, it is obvious that environmental preference changes as one’s experience. During the course of individual socialization, preference towards cultural differences appears; therefore, one is bound to prefer the environment that fits one’s own cultural value for one is familiar with. Present empirical research studies relate to environmental visual preference demonstrate that professionals such as architects or interior designers have significantly different preference from the general public towards man-made environment, and they often misjudge others’ preference [Groat, 1982; Devlin & Nasar, 1989; Nasar, 1989; Nasar & Kang, 1989]. It shows the difference between the professionals and the general public.

To summarize from the above literature reviews regarding creativity, aesthetics, and preference, it is clear that whether the interior design work is popular or not depends on its attributes, creativity, and aesthetic features. In other words, after users’ perception, recognition, and evaluation process, environmental attribute of interior space is determined as creative or aesthetic which would result in preference. Construction of the overall process is preference would be developed once environmental attribute is merged with environmental perception that causes creativity and aesthetics. Human receive environmental perception through vision, therefore, visual preference is the most vital one for environmental preference.

III. Research Methods
This study uses Taiwan’s college students and graduates for its participants. Correlational research is used to discuss relation between each variable, i.e., creativity, aesthetics, and preference. A self-developed survey tool is also applied to
collect data. Delphi method and expert meeting is used to interpret these data, analysis, and statistics qualitatively.

Key issue of this research is relation between creativity evaluation, aesthetic judgment, and visual preference of interior design work. This also includes difference causes by individual attribute variable, prediction of visual preference based on individual attribute, creativity evaluation, and aesthetic judgment. Figure 1 shows the research flow.

![Research Flow of this Study](image1)

Research tool is a set of colored photography of real interior design works. Though on-site survey, pictures, models, or slides display can be used as research tool for environmental aesthetics, majority of foreign studies indicate that participants response identically to the pictures or models displayed as they were on site [Seaton & Collins, 1970; Oostendorp, 1978; Hershberger & Cass, 1974; Kaplan & Kaplan, 1989]. Due to difference among interior space (i.e. residential and commercial space), people have different expectations, as well as the design thinking from the perspectives of designers. Hence, the research tools are categorized as the two types and selected space with similar characteristics, i.e. living room design for residential space, as hotel lobby design for commercial space. The research remakes colored pictures of living rooms in magazines as the research tool, selected and classified by experts based on its spatial features and styles. Participants are freely to evaluate the pictures by their own subjective experience.

The research tools comprise bio-data and preference, creativity and aesthetics evaluation which is a set of colored pictures. Preference is measured by Likert 5-point scale, including extremely pleased (5), pleased (4), neutral (3), displeased (2), and extremely displeased (1). The higher the total score is, the more pleased the participant is. Likert scale is also used to measure aesthetics level, from extremely attractive (5 points) to extremely unattractive (1 point). Higher scores indicate more attractive interior design shown in pictures to the participants. As for creativity evaluation, a Likert 6-point scale is used to prevent Common Method Variance (CMV) that might lead to distortion of the research results [Peng et al., 2006]. 6-point scale ranges from extremely creative (6), creative (5), slightly creative (4), slightly uncreative (3), uncreative (2), to extremely uncreative (1). Again, higher scores stand for more creative as the pictures show.

![Figure 1: Research Flow of this Study](image2)

IV. RESULTS AND CONCLUSIONS

With the self-developed survey tool and colored pictures of hotel lobby and living rooms, this research conducts the internet questionnaires. All 416 valid questionnaires are conducted reliability analysis, before and after studies of common method variance, factor analysis, descriptive statistics, difference test, Pearson product-moment correlation analysis, and multiple regression analysis in SPSS. Delphi method is used later to explain and clarify attributes and features of preference factors. Results are as followed.

4.1. Component Factor Feature

The followings eight and six preference factors are named after Delphi Method analysis for hotel lobby and living room respectively.


Among all factors for hotel lobby, OA7 casual nature is regarded as the most aesthetic one, while OA5 avant-garde future is the least aesthetic factor. Nevertheless, OCS avant-garde future is considered as the most creative one, OC8 dark mystic is least creative. The most preferred factor is OP7 casual nature, as the least preferred factor is OP8 dark mystic.

As for living room, the most aesthetic factor is IA4 bright openness, while the least aesthetic one is IA5 vivid color. However, IC5 vivid color is considered the most creative factor of all, IC6 plain simplicity is the least creative one. The most preferred factor is IP4 bright openness, as the least preferred one is IP5 vivid color.

4.2. Individual Attribute and Feature

Four factors have significance among all 24 aesthetics, creativity, and preference factors for hotel lobby as different genders. The four factors are OA1, OC1, and OP1 European classic, and OA8 dark mystic. Female tops male only on OA8 dark mystic, while male have higher average score on the rest three factors; the result shows that female prefer hotel lobby with modern and dark theme, as they are less interested in classical or elegant European-style hotel lobby.

When it comes to living room, eight factors have significance among all 18 aesthetics, creativity, and preference factors between men and women. The eight factors are IP2 Chinese tradition, IC4 and IP4 bright openness, IC5 classical elegance, IC5 vivid color, IA6, IC6, and IP6 plain simplicity. Female tops male only on IC5 vivid color, male have all higher score than female on the rest seven factors, which indicates that female are more open to bright and colorful space, while male are more conservative on this regard.

In addition, results from multiple regression analysis show that only gender has significant explanatory on living
room preference. Therefore, gender does affect preference of living rooms.

Three out of 24 factors have significance to hotel lobby on different education background, i.e. OC1 and OP1 European classic, and OC7 casual nature. Different education background results in five significant factors among all 18 living room factors. They are: IC1 country life, IA2 and IC2 Chinese tradition, IC3 classical elegance, and IC5 vivid color. Average score of college students are all higher than graduate students on both hotel lobby and living room of all significant factors.

Professional background results in 12 significant factors among all 24 factors for hotel lobby. They are OA1, OC1, and OP1 European classic, OC2 and OP2 stylish fashion, OA4 and OP4 delicate texture, OA5 and OP5 avant-garde future, OC3 simple sophistication, OC7 casual nature, and OA8 dark mystic. As well as 14 significant factors among all 18 factors for living room on this regard. The 14 factors are: IA4, IC1, and IP1 country life, IA2, IC2, and IP2 Chinese tradition, IA3, IC3, and IP3 classical elegance, IA4, IC4, and IP4 bright openness, and IA6 and IP6 plain simplicity. Among all significant factors of professional background, only five background-related factors (i.e. OA4 and OP4 delicate texture, OA5 and OP5 avant-garde future, and OA8 dark mystic) have higher average score than unrelated factors. All the five factors belong to hotel lobby. The results demonstrate a more severe set of criteria of aesthetics, creativity, and preference from design-related participants for living room. Still, design-related participants prefer certain types of hotel lobby, such as space decorated in shades of red, serene tone and organized, unique lighting effects, hi-tech futurism, dark shades of color, splendid pieces of furniture, or modern space in solemn tone of color.

Among all 83 significant factors of aesthetics, creativity, and preference of hotel lobby and living room, 26 are caused by professional background; that is to say that professional background is the most influential variable among all individual attributes.

Moreover, results from multiple regression analysis indicate that professional background has significant explanatory on hotel lobby preference. Therefore, professional background does affect preference of hotel lobby.

4.3. Relation between Aesthetics, Creativity and Preference

Analysis of relation between aesthetics, creativity, and preference for hotel lobby and living room shows that, these three variables are tightly close to one another; still, slight differences exist among the three variables. In addition, relation in-between can be different from places to places. Followings are discussion on different statistics analysis methods.

4.3.1. Results of Descriptive Statistics

Average score of single picture: The highest average score of aesthetics and preference of hotel lobby falls on the same picture (A13 and P14), the second highest average score of aesthetics and creativity belongs to the same picture (A24 and C24) as well. One of the three lowest average scores of aesthetics and preference is the same picture (A33 and P34). When it comes to living room, two of the top three average score of aesthetics and preference are the same pictures (A56 and P57, A45 and P62), while the lowest average score of aesthetics and preference falls on the same picture (A52 and P53). Surprisingly, the lowest average score of aesthetics of hotel lobby is the highest one of creativity (A52 and P53). Also, the picture of living room that has the lowest average score of aesthetics and preference happens to be the highest of creativity (A52, P53, and C52).

Average score of each factor: The top and bottom three factors of aesthetics and preference of hotel lobby are the same, but with different ranks. Simple sophistication happens to be the 3rd of creativity (OC3) and 2nd of aesthetics (OA3). Dark mystic (OC8) is the lowest on creativity, as well as the 2nd lowest of aesthetics (OA8). The 2nd lowest of creativity and 3rd lowest of aesthetics and preference all fall on European classic (OC1, OA1, and OP1 respectively). The 3rd highest of creativity (OC3) and preference (OP3) belong to simple sophistication. And the lowest of creativity and preference is the same of dark mystic (OC8 and OP8). On the living room regard, the top and bottom three of aesthetics and preference are all identical. The 3rd of creativity, aesthetics, and preference is country life (IC1, IA1, and IP1 respectively). Classical elegance (IC3, IA3, and IP3) happens to be 2nd lowest factor on all three aspects.

The highest of aesthetics and preference is causal nature (OA7 and OP7), while it being the 3rd lowest on creativity. The lowest of aesthetics is avant-garde future (OA5), as well as the 2nd lowest of preference (OP5) happens to be the highest on creativity for hotel lobby. The top one factor of aesthetics and preference is bright openness (IA4 and IP4), which falls on the 3rd lowest on creativity. Plain simplicity (IA6 and IP6) is the lowest of creativity, while it ranks the 2nd aesthetics and preference. Being the lowest of aesthetics and preference, vivid color (IA5 and IP5), however, is the highest of creativity. Though Chinese tradition (IA2 and IP2) falls on 3rd lowest of aesthetics and preference, it ranks 2nd of creativity.

Comparing the average of single picture and each factor, it is noticeable that relation between aesthetics and preference seems tighter, while relations between creativity and aesthetics, or creativity and preference seem diverse.

4.3.2. Results of Product-Moment Correlation Analysis

Relations between pairwise factors for hotel lobby reach .01 (two-tailed) significance. Correlation coefficient in-between three variables is .672 of aesthetics and creativity, .622 of aesthetics and preference, and .527 of creativity and preference respectively. Relations between pairwise factors for living room all reach .01 (two-tailed) significance. In the meantime, the correlation coefficient between the three variables is .766 of aesthetics and preference, .689 of aesthetics and creativity, and .512 of creativity and preference respectively. After comparing relations between aesthetics,
creativity, and preference of hotel lobby and living room, it is clear that correlation in-between is slightly different from each other. The highest correlation of hotel lobby goes up to .672 of aesthetics and creativity, while aesthetics and preference have the highest correlation of living room that reaches .766.

4.3.3. Results of Multiple Regression Analysis

Seven out of 21 predictive variables of hotel lobby of individual attribute, aesthetics factor, and creativity factor have 52.1% of preference explained variance. Dark mystic (OC8) is the highest of 24.7%. Regression formula preference is .404×OC8 (dark mystic)+.263×OA2 (stylish fashion)+.200×OA4 (delicate texture)+.188×OA3 (simple sophistication)+.115×OC7 (causal nature)+.126×(age)+.076×(professional background).

Among 17 predictive variables of living room, seven predictive variables account for 59.3% of preference explained variance, while the highest is 36.9% of country life (IA1). Regression formula of preference is .259×IA1 (country life)+.174×IA6 (plain simplicity)+.198×IA2 (Chinese tradition)+.206×IA5 (vivid color)+.186×IA3 (classical elegance)+.150×IA4 (bright openness)+.081×(gender).

Multiple regression analysis shows the main variable as IA1 ‘country life’, accounting for 36.9% of explanatory and the main variable is from aesthetic.

V. Research Suggestions

This research provides some suggestions to following and further research of hotel lobby and living room. Suggestions are as followed.

5.1. Suggestions to Interior Design

- Design needs that fit different types of space: Various recognition and perception usually result from miscellaneous types of space. For instance, recognition to recreational space is surely different from personal private space. Because the users of living room seem to be fixed and regular, this research believes that aesthetics is more important than creativity; hence, design must meet the need of the types of space.
- Miscellaneous recognition and preference by genders: Genders could result in various preferences to space. Female tend to be fund of vibrant and colorful living rooms than male in regards to living space. Results can be used as references for space designed for certain genders.
- Be in the shoes of the users: This research finds out that professional background is the most influential personal variable when it comes to aesthetics, creativity, and preference, which also shows differences between professionals and the general public. However, it does not necessarily mean that designers have to follow the flow and give up their professional style. The fact offers designers a chance to incorporate their professional advice with users’ needs and opinion then to achieve a win-win situation.

5.2. Suggestions to Further Research

- Expanding scope of research participants: This research conducts an online survey to learn internet users’ perception towards aesthetics, creativity, and preference of living rooms. Limited by time and other reasons, the recall ratio of questionnaires did not meet the expected standard; which results in the majority of participants tend to be students. It is strongly recommended to expand the research scope to other groups and users.
- Exploring possibilities of other space: This research uses living room only for its target. However, types of space vary from functions. Miscellaneous functions have different aesthetics, creativity, and preference, and interaction between these factors deserve more attention in further research.
- Discussion on practical factors: This research merely works on aesthetics, creativity and preference of style and format due to restriction of survey tool. Nevertheless, the possible influence on aesthetics, creativity, and preference from practical factors are still worthy of deeper discussion and research.
- Possibilities of using other theories and methods: Correlation analysis is used in this research to discuss aesthetics, creativity, and preference of living room. It is suggested that various analysis methods (i.e. cluster analysis or multidimensional scaling) or other theories (i.e. fuzzy theory or information entropy) can be used for further discussion.

REFERENCES


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