INVESTIGATION OF AESTHETIC PREFERENCE THE SIMPLICITY AND THE COMPLEXITY OF THE VISUAL QUALITIES OF MOTIFS IN ISLAMIC ARCHITECTURE

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ABSTRACT

Simplicity and complexity are opposite concepts, which seems to be the one causing another loss and unlike other concepts of art in almost all natural and man-made phenomena are in several grades and can become things of beauty and pleasantness. As a human achievement, architecture to respond to the needs and aesthetic preferences of its users, the results of evaluating the effects of motif with simple and complex traits can be of interest for architects and designers. The purpose of this research is to understand that this taste and aesthetic preferences of people who are designers or architects for their design tends towards simplicity or the complexity? This tendency is related to age, sex, education, and social trends there? Is it simply a tendency or complexity in all activities and places his presence is constant or varies according to space and activity? This research is a descriptive study, survey and correlation. Reading methods for data collection, documentation used, as well as to evaluate designs with a variety of activities from a questionnaire survey method is used. The study population consisted of 400 residents of the city of Tabriz in 4 ages, 4 level of education and 4 religious beliefs were considered to describe population variables knowledge of society, statistics descriptive name and to check variable keys connection this research of data analyze for aesthetic preferences, according to the opinion of the participants major statistics using spss software ver.19 are used.) Findings show that people prefer that their buildings are designed by architects for this rather simple, and simplicity in the design of religious buildings, official, sports and leisure and home there.

Keywords: *simplicity, complexity, aesthetic, motif, Iranian-Islamic architecture.*

INTRODUCTION

The concept of complexity in architecture could be defined on the basis of its opposition to simplicity or indeed what is obvious and primary. Von Meiss, Pierre (2004) indicates that “when the elements are categorized in a way that inspire more than one deduction to the viewer and it is what is called complexity” (Von Meiss, Pierre, 2004:58). He introduces ways to deal with complexity among which we could point to perversity of norms, divergence or asymmetry, anomaly of regular pattern or deviation from familiar forms (same: 60). Simplicity is in contrast with complexity: Simplicity, an attraction of simple forms, lines, circles, spheres, cubes, pyramids and so on which have lasted for thousands of years. In some cases, when the complex structures are easily converted to simplicity, we capture a sort of satisfaction, peace and praise. Gombrich beliefs that simplicity is essentially tied to the culture of the West Classic. In the East we could still find the traces of these simple and concise forms: from Isfahan Jameh Mosque to Zen Art. Spiritual happiness arising from simplicity is probably related to our inside physiological and perceptual preferences. Recognition of the border between simplicity and banality is ambiguous. There are

major latent differences between beauty and prettiness! Simplicity in architecture and urban design is acquired only by a graceful and pretty solution. Voltaire declares “Beauty is always simple but everything that is simple is not always beautiful” (same: 66). The Kandinsky hypothesis states that basic shapes such as circle, triangle and rectangle are very beautiful in some colors (specified colors) (Jacobsen, 2002).

Birkhoff (1932) defined the relation between order and complexity in mathematical term. He indicated that beauty increases with regulation and reduces with complexity. He described order based on repetition and redundancy and complexity was an expression of diversity. The Eysenck studies (1941&1942) on the relation between aesthetic computed by Birkhoff formula in 1932 and participants rating on beauty indicated that both order and complexity participated as positive factors in perception of beauty (Machado, et al., 2015).

Ferith & Nias used the variation in complexity in their studies. The information theory approach made it possible for them to provide objective measurements from a complex patter. However most respondents preferred a medium level of complexity (Berlyne, 1970). Theorists have long believed that two aspects of complexity including diversity and order, are effective in creation of beauty. From this perspective, it could be said that beauty appears from "unity in diversity" (Tatarkiewicz, 1972).

Berlyne (1970&1971) was probably the first person who offered appropriate psychological explanations for effects of complexity. According to Berlyne framework (theoretical) order is not orthogonal with complexity, given that mess as a sort of complexity was intended with some elements. Several studies were conducted to test this hypothesis (using various visual stimuli). Recent researches showed that their results are highly dependent on the way in which complexity is defined, manipulated or measured (Nadal, Munar, Marty, & Cela-Conde, 2010).

Berlyne (1974) analyzed other psychological variables existing in this area such as severity and frequency, brightness and clarity, saturation and size. The factor of color was introduced as a visual stimuli in primary processing (Zeki, 1980) and a factor affecting the aesthetic preferences (Martindale & Moore, 1998). The concept of complexity is considered as an important variable in aesthetic of form. Berlyne believes that complexity of motif increases with increasing the number of elements that exist independently in it. With regard to Berlyne Theory in response to aesthetic presented in 1974, we explain that sense of satisfaction experienced by viewers about an object will increase with enhanced level of desired complexity. Then the desired level reverses and gradually decreases with increased level of resulted complexity (Bruni&Luigi Porta, 2007:130).

Figure 1. The assumed relation between complexity and given effect by Wundt Curve
Source: Berlyne, 1971:193

Since simplicity and complexity are the two ends of a spectrum and a similar relationship is established between them with beauty, we can generalize the Berlyne theory by saying that increased simplicity / complexity can increase the beauty of an object or effect to an extent. This effect reverses when the effect transgresses this limit. There is a relationship between simplicity and complexity in understanding the

beauty of architecture which makes the addressee feel the beauty inspired by the relation. The beauty is understandable and achievable by both methods of simplicity and complexity, but its extent and rate follows certain elements. The interference of these elements makes a work which claims to be beautiful to change into a banal work. Sometimes a complicated work changes into a crowded and ambiguous object due to the ignorance of contributing elements (Farsi Mohammadi Poor).

The theory of Aesthetic Response was also studied in other areas including Aitken studies on random polygons (1974), Munsinger & Kessen studies on superiority of language (1964), Nicki & Gale studies on use of artificial artwork (1977), Saklofske studies on painting human visages which are all revealing the relationship between pleasure and complexity (1975) (M. Messinger, 1998:558).

RESEARCH METHODOLOGY

The present research is a descriptive (non-experimental) and correlation survey study. Data were collected through three methods: Reading, documents and theoretical foundations in a way that the reading method was used to develop theoretical foundations of research, the field method with survey was used to determine the dimensions of aesthetic and elegance of motifs with a variety of practical activities of subjects. The descriptive and inferential statistic was used for data analysis. The descriptive statistic was used to describe the demographic characteristics of the sample population, the data analysis as well as aesthetic preference of motifs methods were used to investigate the suitability and relevance of key variables of the study. The inferential statistic using SPSS Software ver.19 was used on the basis of subjects' idea.

To determine the validity of tools content, the ideas of professors and professionals experienced in the subject were considered. With regard to these individuals' ideas, the final questionnaire was distributed among the sample. The Cronbach's alpha was used to determine the reliability of the questionnaire. The Cronbach's alpha of all questionnaire items was equal to 0.695 by SPSS Software ver.19 which signifies the internal correlation between questions and data. So the reliability of the questionnaire data was pleasant and the data was validated.

Number of Cases	Cronbach's alpha
18	0.695

Table 1- Valid Statistics- Source: SPSS Software, ver.19

Samples	Type of data	Number	Percent
	Validated data	279	69.8%
	Invalidated data	121	30.2%
	Total data	400	100%

Table 2- Summary of data processing-Source: SPSS Software, ver.19

The variables of this research were divided into two groups of dependent and independent variables. The dependent variables in present research include tendency towards complexity (or simplicity) and independent variables include sex, level of education, age and religious beliefs.

Sex: sex was measured at binary nominal scale and options included men and women.

Level of Education: Educational level was measured at nominal ordinal scale and the options and related values included illiterate , high school diploma , diploma , associate's degree , bachelor's, master 's and Ph.D.

Age: Age was measured at ordinal scale and the options included under 15, 15 to 25 years, 25 to 35 years, 35 to 45 years and above 45 years.

Religious Beliefs: Religious beliefs was measured at ordinal scale and the options included irreligious, normal and religious.

Statistical Population- Sample and Implementation Method

The Subjects were 400 residents of Tabriz among which 84 people were between 0 to 15 years age range (41 females and 43 males), 72 people were in 15 to 25 years age range (36 females and 36 males), 84 people in 25 to 35 years age range (42 females and 42 males), 61 people in 35 to 45 years age range (30 females and 31 males) and 99 people were in age range of over 45 years (49 females and 50 males).

Age Range	Men		Women	
	Freq unc y	Per cent	Per cent	Freq unc y
0 to 15 years	43	10.75%	10.25%	41
15 to 25 years	36	9%	9%	36
25 to 35 years	42	10.50%	10.50%	42
35 to 45 years	31	7.75%	7.50%	30
Over 45 years	50	12.50%	12.25%	49
Sum	202	50.5%	49.5%	198

Research Hypothesis

This research possess one major and 3 secondary sub-hypotheses which are all supplementary in one direction. The hypotheses are as follows: to verify these hypotheses, several questions were designed which are to be described as follows:

Procedure

The motifs used in this research belongs to Islamic era which are at almost average level in terms of simplicity and complexity. The questionnaires tested 5 criteria which lead to the simplicity and complexity of motifs as follows: Color (cold and hot with tonality in 1 and 2 rows), delicacy and coarseness of the joints (row 3), elegance and thickness of joints with twists (row 4), increasing and decreasing the number of elements and details of motifs (row 5), increasing and decreasing the number of elements and details of motifs with twist (row 6).

Each of the motif rows were manipulated with move to the left toward complexity and the move to right toward simplicity. Reduced extraneous elements, removed angles and corners and summarized designs were used to simplify the designs. The numerous and complex compression elements, the plurality of angles and sub-components were also used to make the designs more complex.

Diagram 2. Movement of simplicity and complexity in tested motifs-Source: authors

Questionnaire

The applied questionnaire included the three following parts:

First part: Personal background of respondents such as age range, sex, level of education and religious beliefs (optional)

Figure 1. First part of questionnaire-Source: authors

Second part: This part includes a set of questions about respondents' sense of beauty and aesthetic. Among the motifs presented in the third section of the questionnaire, the best and most beautiful motifs were to be selected for desired activities (administrative, educational, residential, sports and religious) which assess the suitability (fitness) of designs for different spaces and functions (administrative, educational, residential, sports and religious).

Figure 2. Second part of questionnaire-Source: authors

Third part: It includes 6 manipulated rows which represent 5 pairs of contradictory traits as follows: soft and sharp lines, elegant and rough lines, few and numerous elements, the right way and distortion, chromatic cool and warm colors.

Figure 3. Third part of questionnaire-Source: authors

Results of Questionnaire Analysis by SPSS Software, ver.19

According to the sampling and questionnaire data, the index or mean criterion was calculated for each question. (Numbers representing each form are only to identify the shapes and are achieved based on a nominal scale).

q1, q2, q3 and q4 are variables respectively introduced for means answered in questions 1, 2, 3 and 4.

S1, S2, S3 are qualitative variables reflecting the tendency to simplicity and complexity in questions 1, 2, 3 and 4 and each is a grouped variable with two 0 and 1 groups.

q5 to q8 were introduced for questions 5 to 8 on the basis of nominal scale with 0 and 1 codes. Descriptive statistics were calculated for variables of questions 5 to 8 which include central and dispersion indices. The mean value with only two amounts of 0 and 1 (questions 5 to 8) identifies the ratio of samples with code 1.

The skewness for variable 5 is negative and close to zero (skewness to leaf). It is positive and close to zero for other variables (skewness to right), however its rate is not too high. Besides, the kurtosis or Chamfer frequency curve compared to normal standard curve is negative for all negative variables (Chamfer frequency curve).

According to the abundance table of Question 5, 61 % of second row figures and 37.5 % of people prefer the first row figures. Since the figures differ only in color, so we come to conclusion that aesthetic sense of modern people is more inclined toward cold colors.

Question 5					
		Frequency	Percentage	Validated data percentage	Cumulative percentage
Available data	First row	150	37.5	38.1	38.1
	Second row	244	61	61.9	100
	Sum	394	98.5	100	
Lost data	No response	6	1.5		
Total		400	100		

Table 5. Frequency of question 5-Source: SPSS Software, ver.19

In question 6, with regard to frequency table, the figures of third row with the highest point (57.5%) are higher than frequency percentages of fourth row (41.2%). The respondents assessed the right figure motifs more beautiful than tilted motifs in terms of aesthetic aspects.

Question 6					
		Frequency	Percentage	Validated data percentage	Percentage
Available data	Third row	230	57.5	58.2	58.2
	Fourth row	165	41.2	41.8	100
	Sum	395	98.8	100	
Lost data	No response	5	1.2		
Total		400	100		

Table 6. Frequency of question6- Source: SPSS Software, ver.19

In question 7, 68% of respondents preferred figure 2 in row 3 which confirms the results of question 6.

Question 7					
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		Frequency	percentage	Validated data percentage	percentage
Available data	Number 2 Row 3	272	68	68.2	68.2
	Number 2 Row 4	127	31.8	31.8	100
	Sum	399	99.8	100	
Lost data	No response	1	0.2		
Total		400	100		

Table 7. Frequency of question 7-Source: SPSS Software, ver.19

In question 8, 59.5% of respondents selected figure 6 in row 3. So we come to the conclusion that soft angles of motif cannot attract the attention of survey respondents in relation to the selection of distorted motifs. Right motifs are still in beautiful shape.

Question 8					
		Frequency	Percentage	Validated data percentage	Percentage
Available data	Number 6 Row 3	238	59.5	59.8	59.8
	Number 2 Row 4	160	40	40.2	100
	Sum	398	99.5	100	
Lost data	No response	2	0.5		
Total		400	100		

Table 8. Frequency of question 8-Source: SPSS Software, ver.19

Since both variables are based on the nominal scale, Phi and Cramer's correlation coefficient were used to obtain a correlation between color (hot and cold colors) and sex (male and female). According to the results in the below table, we see that the ratio of men who selected the second row (cool colors) was more than women in this statistical population. In other words women preferred warm colors and men preferred cool colors in terms of aesthetic aspects.

Response to question 5 distinguished by sex				
Number				
		Sex		Sum
		woman	man	
Question 5	First row	77	73	150
	Second row	116	128	244
Sum		193	201	394

Due to the constant coefficient of Phi and Cramer and a significance level less than 0.05, (Table 9) the hypothesis of independency of these two variables is rejected. So there is a relationship between sex and choice of hot and cold colors.

		Value	Approximate significance level
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Nominal-Nominal	Fi coefficient	0.037	0.0465
	Cramer coefficient	0.037	0.0465
Number of available cases		394	

Table 9. Symmetrical actions- Source: SPSS Software, ver.19**Hypothesis Testing**

After describing variables and responses obtained from the population, this section examines the hypotheses raised in statistical tests used in the study in order to evaluate the accuracy of our assumptions and prove the verity or untruth of proposed hypothesis by data analysis.

Hypothesis 1: Contemporary aesthetics is more inclined to simplicity.

H_0 (Null Hypothesis): In terms of contemporary aesthetics, there is no difference between average of people inclined to simplicity and complexity.

H_1 (Alternative hypothesis): In terms of contemporary aesthetics, there is a difference between average of people inclined to simplicity and complexity and this tendency is more towards simplicity.

The result is summarized in following table: The table shows the statistical group of T-test independent samples. This table contains the number of cases, the mean value, standard deviation and standard error test variables defined in conjunction with the categories defined by the group variable (simple and complex). Given that we want to compare the average of the two groups it would be useful to know the average values.

The aesthetic sense of people was evaluated according to figures in question 1. 228 people were interested in simple shapes and the average score given to question 1 was equal to 5.87 which is more than the standard mode (score 5) set to distinguish between simplicity and complexity.

Table 10. Statistical group-Source: SPSS Software-ver.19

	sl	Number	Average	Standard Deviation	Standard error Variables
Summary of processed cases					
	Cases				
	Available data		Lost data		Sum
	Number	Percentage	Number	Percentage	Number Percentage
q5 * Sex	394	98.5%	6	1.5%	400 100%
Question 1	Complexity	172	3.305	1.1336	0.0864
	Simplicity	228	5.871	0.6535	0.0433

The above instructions creates two different tests between the two groups of tendency towards simplicity and complexity. The Levene statistic tests this hypothesis. In the first test (first row) it is assumed that the variance of the two groups is equal. Since the significant level of first Levene's test is the small (<0.05), we use the results which did not assume the equality of variances or the second row in other words.

With regard to significance level, the null hypothesis related to equality of variances is rejected. Now the results of the second row shows a small level of significance for T-test. This small level of significance (<0.05) shows that there is significant difference between two groups (tendency to simplicity and complexity) and rejects the null hypothesis. The important thing here is that there is a close relationship between confidence interval and hypothesis testing. The diagram shows the difference between the groups (tendency to simplicity and complexity).

		برای بررسی میانگین‌ها T آزمون						
		F	سطح معنی‌داری	t آزادی	درجه‌ی خطای معنی‌داری دو دم	اختلاف میانگین	اختلاف خطای استاندارد	
							پایین‌ترین مقدار	بالاترین مقدار
q1	واریانس برابر با فرض است	۷۵/۵۳۲	۰/۰۰۰	-۲۸/۴۷۷	۳۹۸	-۲/۵۶۴	-۰/۰۰۱	-۲/۷۴۵
	واریانس برابر با فرض نیست			-۲۶/۵۴۰	۲۵۵/۳۹۵	-۲/۵۶۴	-۰/۰۶۷	-۲/۷۵۷
q2	واریانس برابر با فرض است	۱۴/۵۸۰	۰/۰۰۰	-۳۰/۵۴۳	۳۹۸	-۲/۴۰۹	-۰/۰۷۸	-۲/۵۲۹
	واریانس برابر با فرض نیست			-۲۸/۹۸۳	۲۸۰/۲۱۴	-۲/۴۰۹	-۰/۰۸۳	-۲/۵۷۵
q3	واریانس برابر با فرض است	۳۰/۷۸۹	۰/۰۰۰	-۲۴/۱۶۳	۳۹۷	-۲/۵۵۸	-۰/۰۵۷	-۲/۶۱۵
	واریانس برابر با فرض نیست			-۲۷/۱۲۵	۳۱۰/۷۱۴	-۲/۵۵۸	-۰/۰۳۸	-۲/۷۲۳
q4	واریانس برابر با فرض است	۳۶/۲۷۱	۰/۰۰۰	-۳۰/۱۹۴	۳۹۴	-۲/۶۵۶	-۰/۰۸۸	-۲/۸۳۰
	واریانس برابر با فرض نیست			-۲۸/۳۵۶	۲۶۷/۴۴۶	-۲/۶۵۶	-۰/۰۹۳	-۲/۸۴۱

Table 11. Dependent T-test-Source: SPSS Software, ver.19

		گروه اعتقادی			
رد یا انبیا	فرقیه	تعداد	میانگین	انحراف استاندارد	خطای استاندارد متغیرهای آزمون
قبول	زمین‌شناختی معاصر بیشتر به سمت سادگی	۱۷۲	۳/۳۰۵	۰/۱۳۳۶	۰/۰۰۶۴
	سوق دارد.	۲۲۸	۵/۸۷۱	۰/۶۵۳۵	۰/۰۴۴۳
قبول	افراد در محیط کار و خانه گرایش به سادگی دارند.	۱۶۱	۵/۵۰۰	۰/۵۱۴۴	۰/۰۷۰۵
		۲۳۹	۵/۰۰۸	۰/۳۷۹۸	۰/۰۴۴۰
قبول	افراد در محیط مذهبی گرایش به سادگی دارند.	۲۷۷	۳/۰۰۴	۰/۱۰۵۰۴	۰/۰۶۳۱
		۱۲۳	۵/۵۵۳	۰/۷۶۵۰	۰/۰۶۹۰
قبول	افراد در محیط آموزشی و اداری گرایش به سادگی دارند.	۱۶۶	۳/۳۹۵	۰/۰۵۱۴	۰/۰۸۱۶
		۲۳۰	۶/۰۵۲	۰/۳۹۹۰	۰/۰۶۶۱

Hypothesis 2: The religious people show more tendency to simplicity.

H₀: (Null hypothesis): Different groups (in terms of belief) show no differences in terms of tendency toward simplicity and complexity. Religious beliefs have no effect on the type their point of view.

H₁: (Alternative hypothesis): there is significant differences between different groups of faith and the tendency to simply. According to null hypothesis, the average willingness of the population in three groups is the same in terms of religious beliefs. Therefore we study contemporary aesthetics (in terms of tendency to simply and complexity) among all religious groups Using ANOVA.

Table 12 shows the descriptive statistics (mean tendency to simplicity, standard deviation and standard error). Among total 400 samples, 6 people were irreligious, 117 people were normal and 170 were religious. The average tendency towards simplicity in irreligious and ordinary people groups (in terms of belief) were nearly identical. But the mean value was more in religious group.

s1	Number	Mean	Deviation	Standard error	95% confidence interval for average		Minimum	Maximum
					Lower bound	Upper bound		
Irreligious	6	0.50	0.548	0.224	0.07	1.07	0	1
Ordinary	117	0.51	0.502	0.046	0.41	0.60	0	1
Religious	170	0.65	0.477	0.037	0.58	0.73	0	1

Sum	293	0.59	0.493	0.029	0.53	0.65	0	1
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Table 12. Descriptive Statistics-Source: SPSS Software, ver. 19

Table 13 of Levene Statistics, null hypothesis, rejects the equality of variances due to the significance level of 0.002 which is lower than 0.05.

s1			
Levene Statistics	Variance 1	Variance 2	Level of significance
6.270	2	290	0.002

Table 13. Variance equality test-Source: SPSS Software, ver.19

Decision on the authenticity of null hypothesis could be achieved on the basis of comparison of dispersion between two estimates of inter-group and intra-groups. Since the intra-group comparison estimate was sufficiently smaller than inter-group estimates and the F value (ration of inter-group mean square to intra-group mean group) was more than 1 and with regard to significance level of 0.038, we reject the null hypothesis (Table14).

s1	Sum of squares	Level of freedom	Square mean	F	Level of significance
Intera-group	1.582	2	0.791	3.311	0.038
Inter-group	69.271	290	0.239		
Sum	70.853	292			

Table 14. Variance analysis- SPSS Software, ver. 19

So there is significance difference between different belief groups and level of tendency toward simplicity. The religious beliefs affect the insight of people.

After rejecting the null hypothesis, the multiple comparison was used to define the difference. Ben Ferroni is one of the simplest multiple methods shown in following table.

s1 Ben Ferroni						
(I) Level of Religiosity	(J) Level of Religiosity	Mean difference (I-J)	Standard error	Level of significance	95% confidence interval	
					Lower bound	Upper bound
Irreligious	Normal	-0.004	0.205	1.000	-0.50	0.49
	Religious	-0.153	0.203	1.000	-0.64	0.34
Normal	Irreligious	0.004	0.205	1.000	-0.49	0.50
	Religious	-0.149*	0.059	0.036	-0.29	0.00
Religious	Irreligious	0.153	0.203	1.000	-0.34	0.64
	Normal	0.149*	0.059	0.036	0.01	0.29
*The mean difference is significant at 5% level.						

Table 15. Ben Ferroni multiple comparison-Source: SPSS Software, ver.19

It is evident that people with more level of religious beliefs (religious) are significantly more inclined to simplicity compared to people with ordinary beliefs. There is no significant difference between the two groups of religious and irreligious people as well as the irreligious and people with ordinary beliefs. So the hypothesis that religious people have more inclinations toward simply is not rejected.

Hypothesis 3: Young people are more inclined to simplicity. The old people are more inclined to complexity.

H_0 : (Null hypothesis): Average tendency to simply is equal to average tendency to complexity among different age groups.

H_1 : (Alternative hypothesis): There is significant difference between the averages of these tendencies.

The result is shown in following table.

The first table shows the descriptive statistic in all age ranges.

s1	تعداد	میانگین	انحراف معیار	خطای استاندارد	فاصله‌ی اطمینان برای میانگین		حداکثر	حداندر
					کرن پایین	کرن بالا		
کمتر از ۱۵ سال	۸۵	۰.۱۵۳	۰.۱۵۰۳	۰.۰۱۵۴	۰.۴۲	۰.۶۴	۰	۱
بین ۱۵ تا ۲۵ سال	۷۲	۰.۱۵۳	۰.۱۵۰۳	۰.۰۱۵۹	۰.۴۱	۰.۶۵	۰	۱
بین ۲۵ تا ۳۵ سال	۸۴	۰.۱۶۵	۰.۱۴۷۸	۰.۰۱۵۲	۰.۵۵	۰.۷۶	۰	۱
بین ۳۵ تا ۴۵ سال	۶۱	۰.۱۵۴	۰.۱۵۰۲	۰.۰۱۶۴	۰.۴۱	۰.۶۷	۰	۱
بالای ۴۵ سال	۹۸	۰.۱۵۸	۰.۱۴۹۶	۰.۰۱۵۰	۰.۴۸	۰.۶۸	۰	۱
مجموع	۴۰۰	۰.۱۵۷	۰.۱۴۹۶	۰.۰۱۲۵	۰.۵۲	۰.۶۲	۰	۱

Table 16. Descriptive studies- Source: SPSS Software, ver.19

Table 17 of Levene statistics rejects the null hypothesis of equality of variance groups (the significance level is less than 0.05).

s1			
Levene Statistics	df1	df2	Level of significance
4.684	4	395	0.001

Table17. Test of Homogeneity of Variances- Source: SPSS Software, ver.19

The F statistics and its related significance level is shown in Table 16. We cannot reject the null hypothesis because the significance level of 0.434 is more than 0.05 and the F^{34} ratio is close to one (0.952) which shows that the null hypothesis is correct because both of them are an estimate of population variance.

s1	sum of squares	Level of freedom	Mean Square	F Statistics	Level of significance
Intra-group	0.937	4	0.234	0.952	0.434
Inter-group	97.103	395	0.246		
Sum	98.040	399			

Table 18. Analysis of variance- Source: SPSS Software, ver. 19

The Ben Ferroni in table 19 shows that there is not a significant difference between the groups in terms of their tendency to simplicity and complexity, because none of the pairs are significant in the columns of mean difference. None of the pairs are significant so age difference has no effect on the change of aesthetic tendency towards simplicity or complexity. The hypothesis which says that young people are more inclined to simplicity and older people are more inclined to complexity is rejected.

سن	سن (ل)	اختلاف میانگین (ل-ا)	خطای استاندارد	سطح معنی داری	فاصله‌ی اطمینان	
سن (ا)	سن (ل)				کرن پایین	کرن بالا
کمتر از ۱۵ سال	بین ۱۵ تا ۲۵ سال	۰/۰۰۲	۰/۰۷۹	۱/۰۰۰	-۰/۲۲	۰/۲۳
	بین ۲۵ تا ۳۵ سال	-۰/۱۲۵	۰/۰۷۶	۱/۰۰۰	-۰/۳۴	۰/۰۹
	بین ۳۵ تا ۴۵ سال	-۰/۰۱۲	۰/۰۸۳	۱/۰۰۰	-۰/۲۵	۰/۲۳
	بالای ۴۵ سال	-۰/۰۵۲	۰/۰۷۳	۱/۰۰۰	-۰/۲۶	۰/۱۶
بین ۱۵ تا ۲۵ سال	کمتر از ۱۵ سال	-۰/۰۰۲	۰/۰۷۹	۱/۰۰۰	-۰/۲۳	۰/۲۳
	بین ۲۵ تا ۳۵ سال	-۰/۱۲۷	۰/۰۸۰	۱/۰۰۰	-۰/۳۵	۰/۱۰
	بین ۳۵ تا ۴۵ سال	-۰/۰۱۳	۰/۰۸۶	۱/۰۰۰	-۰/۲۶	۰/۲۳
	بالای ۴۵ سال	-۰/۰۵۴	۰/۰۷۷	۱/۰۰۰	-۰/۲۷	۰/۱۶
بین ۲۵ تا ۳۵ سال	کمتر از ۱۵ سال	۰/۱۲۵	۰/۰۷۶	۱/۰۰۰	-۰/۰۹	۰/۲۴
	بین ۱۵ تا ۲۵ سال	۰/۱۲۷	۰/۰۸۰	۱/۰۰۰	-۰/۱۰	۰/۲۵
	بین ۳۵ تا ۴۵ سال	۰/۱۱۴	۰/۰۸۳	۱/۰۰۰	-۰/۱۲	۰/۲۵
	بالای ۴۵ سال	۰/۰۷۳	۰/۰۷۴	۱/۰۰۰	-۰/۱۳	۰/۲۸
بین ۳۵ تا ۴۵ سال	کمتر از ۱۵ سال	۰/۰۱۲	۰/۰۸۳	۱/۰۰۰	-۰/۲۲	۰/۲۵
	بین ۱۵ تا ۲۵ سال	۰/۰۱۳	۰/۰۸۶	۱/۰۰۰	-۰/۲۳	۰/۲۶
	بین ۲۵ تا ۳۵ سال	-۰/۱۱۴	۰/۰۸۳	۱/۰۰۰	-۰/۳۵	۰/۱۲
	بالای ۴۵ سال	-۰/۰۴۱	۰/۰۸۱	۱/۰۰۰	-۰/۲۷	۰/۱۹
بالای ۴۵ سال	کمتر از ۱۵ سال	۰/۰۵۲	۰/۰۷۳	۱/۰۰۰	-۰/۲۶	۰/۲۶
	بین ۱۵ تا ۲۵ سال	۰/۰۵۴	۰/۰۷۷	۱/۰۰۰	-۰/۱۶	۰/۲۷
	بین ۲۵ تا ۳۵ سال	-۰/۰۷۳	۰/۰۷۴	۱/۰۰۰	-۰/۲۸	۰/۱۳
	بین ۳۵ تا ۴۵ سال	-۰/۰۴۱	۰/۰۸۱	۱/۰۰۰	-۰/۱۹	۰/۲۷

Table 19. Multiple comparison- Source: SPSS Software, ver. 19

Hypothesis 4: the more educated people have more tendency to simplicity

There is no statistical significance difference between individuals' aesthetic preferences and their level of education, however this difference is significant in home environment, office and educational spaces. It seems that people with higher level of education have more tendency towards simplicity at home and working places. This tendency is toward complexity in people with very high or very low educational degree. The difference is not also significant amongst different educational groups in educating places (in terms of level of significance).

		تعداد	میانگین	انحراف معیار	خطای استاندارد	۹۵٪ فاصله‌ی اطمینان برای میانگین		حد اکثر مقدار	حد اقل مقدار
						کمران بالا	کمران پایین		
S1	بی‌سواد	۶	۰/۵۰	۰/۵۴۸	۰/۲۲۴	۰/۰۷	۰/۰۷	۰	۱
	زیر دبلم	۱۵۰	۰/۵۵	۰/۴۹۹	۰/۰۴۱	۰/۴۷	۰/۶۳	۰	۱
	دبلم	۸۲	۰/۵۵	۰/۵۰۱	۰/۰۵۵	۰/۴۴	۰/۶۶	۰	۱
	فوق دبلم	۴۲	۰/۵۲	۰/۵۰۵	۰/۰۷۸	۰/۳۷	۰/۶۸	۰	۱
	لیسانس	۸۳	۰/۶۶	۰/۴۷۶	۰/۰۵۲	۰/۵۶	۰/۷۷	۰	۱
	فوق لیسانس	۲۶	۰/۶۲	۰/۴۹۶	۰/۰۹۷	۰/۴۱	۰/۸۲	۰	۱
	دکتری	۱	۰/۰۰	۰/۰۰۰	۰/۰۰۰	۰/۰۰	۰/۰۰	۰	۰
	مجموع	۳۹۰	۰/۵۷	۰/۴۹۵	۰/۰۲۵	۰/۵۳	۰/۶۲	۰	۱
S2	بی‌سواد	۶	۰/۶۷	۰/۵۱۶	۰/۲۱۱	۰/۱۲	۰/۳۱	۰	۱
	زیر دبلم	۱۵۰	۰/۵۴	۰/۵۰۰	۰/۰۴۱	۰/۴۶	۰/۶۲	۰	۱
	دبلم	۸۲	۰/۵۷	۰/۴۹۸	۰/۰۵۵	۰/۴۶	۰/۶۸	۰	۱
	فوق دبلم	۴۲	۰/۶۴	۰/۴۸۵	۰/۰۷۵	۰/۴۹	۰/۷۹	۰	۱
	لیسانس	۸۳	۰/۶۹	۰/۴۶۷	۰/۰۵۱	۰/۵۸	۰/۷۹	۰	۱
	فوق لیسانس	۲۶	۰/۶۵	۰/۴۸۵	۰/۰۹۵	۰/۴۶	۰/۸۵	۰	۱
	دکتری	۱	۱/۰۰	۰/۰۰۰	۰/۰۰۰	۰/۰۰	۰/۰۰	۱	۱
	مجموع	۳۹۰	۰/۶۰	۰/۴۹۱	۰/۰۲۵	۰/۵۵	۰/۶۵	۰	۱
S3	بی‌سواد	۶	۰/۰۰	۰/۰۰۰	۰/۰۰۰	۰/۰۰	۰/۰۰	۰	۰
	زیر دبلم	۱۵۰	۰/۳۵	۰/۴۷۸	۰/۰۳۹	۰/۲۷	۰/۴۲	۰	۱
	دبلم	۸۲	۰/۲۹	۰/۴۵۸	۰/۰۵۱	۰/۱۹	۰/۳۹	۰	۱
	فوق دبلم	۴۲	۰/۲۹	۰/۴۵۷	۰/۰۷۱	۰/۱۴	۰/۴۳	۰	۱
	لیسانس	۸۳	۰/۳۴	۰/۴۷۶	۰/۰۵۲	۰/۲۳	۰/۴۴	۰	۱
	فوق لیسانس	۲۶	۰/۱۹	۰/۴۰۲	۰/۰۷۹	۰/۰۳	۰/۳۵	۰	۱
	دکتری	۱	۰/۰۰	۰/۰۰۰	۰/۰۰۰	۰/۰۰	۰/۰۰	۰	۰
	مجموع	۳۹۰	۰/۳۱	۰/۴۶۳	۰/۰۲۳	۰/۲۶	۰/۳۶	۰	۱
S4	بی‌سواد	۶	۰/۳۳	۰/۵۱۶	۰/۲۱۱	۰/۲۱	۰/۸۸	۰	۱
	زیر دبلم	۱۴۹	۰/۵۵	۰/۴۹۹	۰/۰۴۱	۰/۴۷	۰/۶۳	۰	۱
	دبلم	۸۲	۱/۲۶۷	۱/۰۲۶۸	۱/۲۱۷۷	۰/۱۱۵۶	۳/۶۹۰	۰	۹۹۹
	فوق دبلم	۴۲	۰/۷۶	۱/۱۰۰	۰/۱۷۰	۰/۴۲	۱/۱۰	۰	۷
	لیسانس	۸۳	۱/۲۶۹	۱۰۹/۵۸۳	۱/۲۰۴۸	۰/۱۱۲۴	۲/۶۶۱	۰	۹۹۹
	فوق لیسانس	۲۶	۰/۷۷	۰/۴۳۰	۰/۰۸۴	۰/۶۰	۰/۹۴	۰	۱
	دکتری	۱	۱/۰۰	۰/۰۰۰	۰/۰۰۰	۰/۰۰	۰/۰۰	۱	۱
	مجموع	۳۸۹	۵/۷۳	۷۱/۴۹۹	۳/۶۳۵	۰/۱۴۰	۱۳/۸۶	۰	۹۹۹

Table 20. Descriptive statistics- Source: SPSS Software, ver.19

سطح معنی داری	۲df	۱df	آماره لون	
۰/۰۰۱	۳۸۳	۵	۴/۰۰۳ ^a	۱S
۰/۰۰۰	۳۸۳	۵	۴/۶۴۵ ^b	۲S
۰/۰۰۰	۳۸۳	۵	۱۰/۹۶۴ ^c	۳S
۰/۰۶۲	۳۸۲	۵	۲/۱۱۹ ^d	۴S
a. گروه‌ها تنها با نادیده گرفتن یک مورد در محاسبه‌ی آزمون همگنی واریانس برای S1				
b. گروه‌ها تنها با نادیده گرفتن یک مورد در محاسبه‌ی آزمون همگنی واریانس برای S2				
c. گروه‌ها تنها با نادیده گرفتن یک مورد در محاسبه‌ی آزمون همگنی واریانس برای S3				
d. گروه‌ها تنها با نادیده گرفتن یک مورد در محاسبه‌ی آزمون همگنی واریانس برای S4				

Table 21. Homogeneity of variance test-Source: Spss Software

		مجموع مربع ها	درجه ی آزادی	مربع میانگین	F	سطح معنی داری
S1	بین گروهی	۱,۲۸۱	۶	۰,۲۱۴	۰,۸۶۹	۰,۵۱۷
	درون گروهی	۹۴,۰۶۲	۲۸۲	۰,۳۳۴		
	مجموع	۹۵,۳۴۴	۲۸۹			
S2	بین گروهی	۱,۵۶۲	۶	۰,۲۶۰	۱,۰۸۴	۰,۰۳۷۱
	درون گروهی	۹۲,۰۲۷	۲۸۲	۰,۳۲۰		
	مجموع	۹۳,۵۸۹	۲۸۹			
S3	بین گروهی	۱,۳۴۶	۶	۰,۲۲۴	۱,۰۴۶	۰,۰۳۹۵
	درون گروهی	۸۲,۱۱۳	۲۸۲	۰,۲۹۴		
	مجموع	۸۳,۴۵۹	۲۸۹			
S4	بین گروهی	۱۳۸۲۸,۲۵۳	۶	۲۳۰۶,۳۷۵	۰,۴۴۷	۰,۸۴۷
	درون گروهی	۱۹۶۹۶۶,۴۰۵	۲۸۲	۵۱۵۶,۱۹۰		
	مجموع	۱۹۸۳۵۰۲,۶۵۸	۲۸۸			

Table 22. Analysis of variance-Source: Spss Software

CONCLUSION

According to this study, contemporary aesthetics is more inclined towards simplicity. With regard to the point that 1 to 7 grades were regarded for each of the figures applied in the questionnaire from left to right, and grade 5 was set as the interval between simple and complex motifs and the mean degree was equal to 5.87 which is more than the standard grade (grade 5), so the hypothesis that contemporary aesthetics is more inclined toward simplicity is verified. According to present study, people with more religious beliefs have more tendency towards simplicity. In fact the average tendency of people to simplicity is almost identical in both groups of religious people and people with ordinary beliefs (in terms of belief), however the average value is higher in religious group. The Levene statistics obtained for null hypothesis denies the equality of variances in different groups. There is significant difference between diverse groups in terms of belief and tendency toward simplicity and the religious inclinations affect the people's point of view. According to Ben Ferroni comparison, the people with more religious beliefs (religiuous) are more significantly inclined to simplicity compared to the people with ordinary beliefs. Besides, there is

significant difference between two groups of religious and irreligious as well as irreligious and people with ordinary beliefs. So the hypothesis that people with religious beliefs have more tendency to simplicity is not rejected. According to the present study, the young people are not inclined to simplicity. In fact age has no impact in the change of peoples' aesthetic tendency toward simplicity or complexity. The hypothesis that younger people are more inclined to simplicity is rejected. The present study shows that people with higher level of education are more inclined toward simplicity in house and working places. In religious environment, this tendency amongst people with very high or very low educational background is toward complexity. There is also no significant difference between diverse educational groups in educating places.

REFERENCES

- Farsi Mohammadi Pour, Alireza, (2005), the concept of order in the architectural aesthetics, University of Kurdistan, Kurdistan.
- Von Meiss, Pierre, (2004), look at the fundamentals of architecture of the form to place, translated by Simon Ayvazian, Publishing Tehran University, Tehran.
- Berlyne, D. (1970). Novelty, complexity and hedonic value. *Perception and Psychophysics*, 8, 279-286.
- Berlyne, D. (1971). *Aesthetics and Psychobiology*. New York: Appleton-Century-Crofts.
- Berlyne, D. (1974). *Studies in the new experimental aesthetics*. New York: Wiley.
- Bruni, L., & Luigi Porta, P. (2007). *Handbook on the Economics of Happiness*. Massachusetts, USA: Edward Elgar.
- Helson, H. (1964). *Adaptation-level theory: An experimental and systematic approach to behavior*. New York: Harper and Row.
- Jacobsen, T. (2002). Kandinsky's questionnaire revisited: Fundamental correspondence of basic color and form. *Perceptual and Motor Skills*, 95, 903 - 913.
- Jacobsen, T. (2002). Kandinsky's questionnaire revisited: Fundamental correspondence of basic color and form. *Perceptual and Motor Skills*, 95, 903 - 913.
- Leder, H., Belke, B., Oeberst, A., & Augustin, D. (2004). A model of aesthetic appreciation and aesthetic judgments. *British Journal of Psychology*, 98, 489-508.
- M. Messinger, S. (1998). Pleasure and Complexity: Berlyne Revisited. *The Journal of Psychology*, 558-560.
- Machado, P., Romero, J., Nadal, M., Santos, A., Correia, J., & Carballal, A. (2015). Computerized measures of visual complexity. *Acta Psychologica*, 160, 43-57.
- Martindale, C., & Moore, K. (1998). Priming, prototypicality, and preference. *Journal of Experimental Psychology: Human Perception and Performance*, 14(4), 661-670.
- Nadal, M., Munar, E., Marty, G., & Cela-Conde, C. (2010). Visual Complexity and Beauty Appreciation: Explaining the Divergence of Results. *Empirical Studies of the Arts*, 28, 173-191.
- Tatarkiewicz, W. (1972). The great theory of beauty and its decline. *The Journal of Aesthetics and Art Criticism*, 31, 165-180.
- Zeki, S. (1980). The representation of colours in the cerebral cortex. *Nature*, 284, 412- 418.