The Effects of Space Quality of Dormitory Rooms on Functional and Perceptual Performance of Users: Zübeyde Hanım Sorority

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ABSTRACT

In this study, the role of interior characteristics of rooms and people – things' densities in space perception were argued by evaluating the functional and perceptual qualities of 2, 4 and 8- person rooms of Zübeyde Hanım Sorority located in Ankara. For this purpose, with the scope of evaluation of interior equipment elements and architectural features of the rooms; gratitude and request status of the users and perceptual performances were measured by the help of a detailed survey. According to this, it was determined that a considerable part of the users is displeased with the inadequacy of bunk bet. al., cupboards, tables and chairs in the rooms and ask for bookshelves and shoe cabinets. On the other hand, the users interpreted three different rooms by perceiving them asunderly. Attendantly, it was cogitated that layout excursion depending on things' densities and in architectural features of the rooms were thought to be effective rather than inadequacy of interior equipment elements in different perception of the rooms. The perceptual evaluations of the rooms from positive to negative were arranged as 2-room > 8-room > 4-room. Ultimately, in the positive perception of interiors, the idea that room size and personal area average depending on things' densities are effective rather than the number of people living in the room can be asserted.

Key Words: *Student dormitory, Equipment element, Interior design, Furniture.*

1. INTRODUCTION

Accommodation is one of the most basic necessities of human life and impossible to back off. People have been meeting their accommodation needs from cave dwelling extending to housing spaces in all their life processes. Besides the proportions of accommodation spaces, their qualifications are also significant in terms of psychological aspect. People resolve their short-long term accommodation needs via domiciles, hotels, hostels, dormitories and guesthouses. These spaces that provide important contributions to the accommodation need affect individuals' mental and physical healths, life qualities and happinesses positively/ negatively. The mentioned effects are directly related with the location, architectural shape, size and ease of use [1-3].

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When university students go a university out of their hometowns, they generally can not stay in the family houses; they stay in state dormitories, private dormitories, student houses, guesthouses etc.

Accommodation is the first problem students meet when they go another city for education. In our country, depending on the fact that the numbers of the universities and student capacities have been increased in recent years and because of not investigating state dormitories, capacities of the extant dormitories have been incommensurate and hereat, the problem of student accommodation reaches serious dimensions [4]. In her study, Ekşi [5] informed that 40% of students come up against the accommodation problem. In her study Orhon [4] propounded that the accommodation problem is one of the most significant matter affecting students' success. Şeker et. al. [6] determined that being pleased with the space that is to be stayed has effect on students' success. In his study, Yapıcı [7] informed that the accommodation problems affect students' academic success in negative way. And in a similar study, Çelik [8] informed that the most appropriate accommodation way is state dormitory. Kaya et. al. [9] propounded that almost half of the studying spaces of the students abiding state dormitories are incommensurate. Güldiken and Özekicioğlu [10] depicted the inadequacy of the studying spaces and not being able to watch TV in state dormitories. As to Walden et al. [11], researched the user densities in dormitory rooms and propounded that three people who were replaced in double-rooms perceived the rooms as very crowded. And Altman [12] stated that the increase in the number of people in a space might enhance the social interaction, attenuate the privacy and cause to the undesirable social interactions. Güler and Çobanoğlu [13] reported the cause of the impairment of health standards of a house that is determining some of the basic elements as; being over 1,5 person of the number per room, extreme assemblage in bedrooms and being lower than $3,7m^2$ of sleeping areas for each person. Jinseon and Sehwa [14] stated that the number of people in the room, personal area proportions and sincerity with roommates factors are effective in the perception of minimum sovereignty and privacy; and propounded that complacence with the room is related with personal area proportion, privacy perception, and that the more positive perception of privacy of the dormitory users pave the way for higher complacence. In a more recent study, Amole [15] ascertained the displeasure of more than half of the students taken into the scope of the research about the cases containing the spaces' qualifications like the combinations of corridors, design type, densities in storage, kitchen and bathroom furnishings. In the study Kaya and Erkip [16] performed in the scope of the effect of floor height on room size and crowding perception, examined the dormitory rooms that were five-floor, equal size and densities and determined that the students perceived the rooms as larger and less crowded comparing with the students living in the bottom floors. Besides, it is determined that when the room is perceived larger and the privacy perception is increased, pleasure with the room will also increase.

Barnhart and Barnhart [17] defined the dormitory as a space that has a lot of rooms to sleep and live and a few beds in each room. And TS 11498 [18] defined the student dormitories as buildings in which the necessities

of the students like social activities, studying lesson, sleeping, taking rest and nourishment are met. TS 11498 gave general rules that also contain the number of people for dormitory buildings. According to this, in a dormitory building that is in accordance with the standards;

- Student beds must be allocated maximum four-person.

- If single bedroom is allocated, then $9m^2$ measurement must be performed.

- Using bedrooms as a group, the bedrooms must be at least $5m^2$ for each person and $12,5m^3$ air measurement must be performed.

- In the dormitory room, bathroom must have 1 shower per 4-8 students and in every floor, there must be 2 bathrooms for the whole dormitory, for 6-10 male students there must be 1 WC + urinal, and for 6-8 female students there must be 1 WC.

Buildings that students accommodate are the spaces they interact throughout their university lives. In this sense, accommodation circumstances of these spaces in which students are in individual and social development process must be known and constantly developed [10]. Because human needs are the environmental and communal circumstances that serve for users to be efficient in the works they do and to maintain their lives without having discomfort in many aspects (physiological, communal, psychological etc.) [19]. Human needs are personal data and abstract concepts that can not be observed [20]. In order to be comprehended of human needs and behaviours and causes for these, behaviours must be known [21]. According to İzgi [22], spaces have an abstract dimension that can not be measured and are based on perception and discernment of effects on emotions. What gives feature to this space is this value.

In addition to the objective physical environment data, the role of emotions in perception of a space is also important. The space perceived with experiences is an emotional case embodying movements and every movement affects emotions. While various emotional data is gathering together and faciliating to have a whole image, it enforces spatial perception.

It is vengeancely significant to meet accommodation necessities of the students in their education process who are going to dominate Turkey's future almost in every field. Especially meeting accommodation necessitities of female students studying in different occupational areas via state dormitories is significant by means of secure environment, economy, personality development etc. From this point of view, to what extent female students' necessities and wishes are met along their education processes in the dormitories they accommodate is not exactly known. It is highly convenience to improve and ameliorate the architectural shape, size, equipment elements and materials, the number of, size, densities of the equipment and area per capita that are in available dormitories in terms of functional and determining the spaces' spatial qualities and with the findings to be gained and construction of new buildings.

In this context, *Zübeyde Hanım Sorority* in which a significant part of Ankara State University students accommodating in dormitories reside in and is 1260

people capacity was chosen as research environment. It is envisaged that female students accommodating in this sorority have various problems in terms of functional and perceptual quality of spaces. According to this, hypothesis of the research are as follows;

H1: Bunk bet. al., cupboards, tables and chairs that are in dormitory rooms can not meet the users' sleeping, studying and storage necessities.

H2: Dormitory rooms having person-thing densities in respect of three architectural plan types and furnishing have several different effects on perceptual performances of the users.

In order to examine the hypothesis above, methods developed appropriately for the aim of the research are given below.
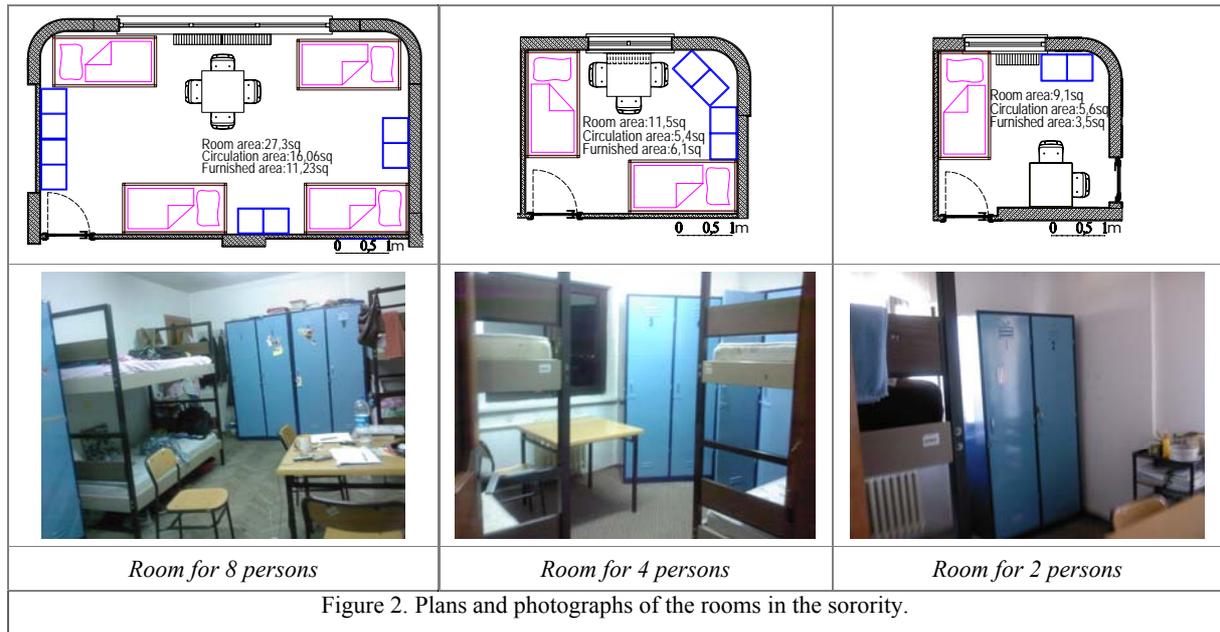
2. RESEARCH METHOD

2.1. Borders of the Research

This research was performed in the buildings of *Zübeyde Hanım Sorority* located in "Meric St, Nr: 9, Bestepe /Ankara" and used by a significant part of female students of state universities in Ankara. The sorority buildings had been designed as a house by Reşat ÇAMLI in 1985 but later it was started to be used as a sorority by changing its purpose. The sorority chosen is composed of 4 buildings of 10 and 12 floors as two interdependent blocks in the same architectural plan (Figure1). There are common service spaces consisting of three different types of rooms (rooms for 2, 4 and 8 persons), bathroom, toilet and kitchen which are closed to use later in the flats opposite to each other on each floor in the buildings. There are two rooms for 4 persons, nearly in the same size and having the same furnished layout plan on each floor. In this research, the room for 4 whose plan was given in Figure 2 is used. Each room has equipments like double-decker, steel cabinet, werzalit table and chair having same features and in equal numbers for each student. Walls and ceilings in the rooms are covered by water base paint and wood parquet and carpets are used for the floors.

Figure 1. General outlook of *Zubeyde Hanim Sorority* buildings.

Architectural features, interior equipments and the relations to other spaces of the rooms which are in the scope of this research are same but their positions to directions are different. Photographs and furnishing plans of these three different type rooms are given in Figure2.

Figure 2. Plans and photographs of the rooms in the sorority.

The characteristic features of the interior equipments in these three different type rooms are given in Table 1.

Table 1. Characteristic features of the interior equipments in these three different type rooms.

Interior Equipment Elements	Characteristic Material	Features of Colour	The Interior Equipment Elements Sizes (cm)		
			Width	*Depth*	*Height*
Double-decker	Metal	Brown	198	98.5	186
Cabinet	Metal	Blue	51	50	193
Desk	Werzalit and metal	Beech	80	80	73
Chair	Werzalit and metal	Beech	44	43	77

2.2. Design and Application of the Survey

The dependent variables on the basis of research hypothesis are considered at one dimension and measured with the assistance of a survey. The survey form is categorized in three groups. The first part is composed of the questions regarding the general information about users, the second part is composed of users' satisfaction and wishes regarding the sorority rooms and the third part is composed of the questions regarding the assessment on perceptual quality of the spaces.

Surveys found reliable and valid in the researches done previously by Imamoglu [23], Kaya and Erkip [16], Yildirim and Akalin-Baskaya [24], Yildirim et. al. [25], Yildirim et. al. [26], Yildirim and Hidayetoglu [27], Amole [15] are benefited from in the sorority rooms assessment of users and 7 graded semantic differentiation measurement (1: positive, 7: negative) consisting of ten adjective pairs from positive to negative are used (happy / unhappy, peaceful / unpeaceful, spacious / boring, warm / cold, bright / dark, attractive / unattractive, pleasant / unpleasant, active / stationary, calm / restless, comfortable / uncomfortable).

Research data is gained by the assistance of a detailed survey among 300 sorority residents who are chosen randomly by sampling method from about 1260 students residing at Zubeyde Hanim Sorority in 2009. The survey is performed by face to face technique in 15 minutes in different times of the day, including weekdays and weekends in two month period.

2.3. Statistical Analysis

In this research, assessments of sorority rooms' environmental conditions by the residents are considered as "*dependent variable*". There are many factors affecting residents' perceptual performance. The type of rooms (rooms for 2, 4 and 8 persons) among these factors is considered as "*independent variable*". In order to test the hypothesis of this research from which the data gained was applied through Cronbach Alpha reliability tests and its categorical means and standard deviation values are defined. After that, in order to see the relationships between the dependent and independent variables containing performance assessments of spaces *Pearson Chi-Square* (x^2) test is applied and one way variance analysis (ANOVA) is applied in order to see if the differences between dependent and independent variables containing the assessments on perceptual performance of spaces are significant statistically. Moreover, data is expressed graphically in order to be able to compare the means belonging to variables.

3. FINDINGS AND DISCUSSION

Research environment is the rooms used by female students in *Zubeyde Hanim Sorority* buildings of Higher Education Credit and Dormitories Directorate in Besevler settlement within in the borders of Ankara. The findings gained from these rooms are given in an order below.

3.1. Functional Performance Analysis of the Rooms

Table 2. Satisfaction regarding the settlement pattern of equipment elements.

Settlement Pattern of the Equipment Elements	Types of Rooms							
	Room for 8		Room for 4		Room for 2		Total	
	n	%	n	%	n	%	n	%
Satisfied	96	73	72	52	24	80	192	64
Dissatisfied	36	27	66	48	6	20	108	36
Total numbers of persons	132	44	138	46	30	10	300	100

x^2: 16.074, df 2, P=0.000

In Table 2, it is seen that 48% of residents are not satisfied with the rooms for 4, 27% with the rooms for 8 and 20% with the rooms for 2. It becomes prominent here that nearly half of the residents are not satisfied with the settlement pattern of the room for 4. There is a correlation between the settlement pattern of the rooms and the residents' satisfaction according to the result of *Pearson Chi-Square* test regarding the settlement pattern of the rooms residents stay. Consequently, we can consider a meaningful relationship statistically between the settlement pattern of the rooms and the satisfaction cases in the level of p< 0.001. Accordingly, the settlement pattern of the rooms has an influence on the

Residents' assessments regarding their satisfaction and wishes about the interior equipment elements are given in order below.

Satisfaction about the settlement pattern, amount of furniture, double-decker, cabinet and table / chair are given in order in Tables 2, 3, 4 and 5.

satisfaction. Moreover, the complaints about the problems residents experience with the settlement arrangements of the equipment elements are confirmed by open ended questions. According to this, 13% of the residents mention that the rooms are small in relation to the number of residents, 9% mention that the rooms are not useful, 7% mention that they are too cramped and 3% mention that there is no empty space and they are too depressing. When the satisfaction assessments on the settlement arrangements of the rooms are arranged from positive to negative it is room for 2 > room for 8 > room for 4.

Table 3. Satisfaction cases regarding furniture density in the rooms.

Furniture Density in the Rooms	Room Types							
	Room for 8		Room for 4		Room for 2		Total	
	n	%	n	%	n	%	n	%
Satisfied	83	63	63	46	20	67	166	55.3
Dissatisfied	49	37	75	54	10	33	134	44.6
Total number of residents	132	44	138	46	30	10	300	100

x^2: 9.833,   df: 2,   P = 0.007

It is seen in Table 3 that 54% of residents are not satisfied with the rooms for 4, 37% with the rooms for 8 and 33% with the rooms for 2. It becomes prominent here that over half of the residents are not satisfied with the furniture density of the rooms for 4. The differences for user satisfaction in relation to furniture density could be caused by the circulation of area size for per capita. Accordingly, the circulations of area size for rooms are respectively found as 1,3m^2 for 4, 2m^2 for 8 and 2,8m^2 for 2 persons. There is a correlation between the furniture density of the rooms and the residents' satisfaction according to the result of *Pearson Chi-Square* test regarding the furniture density of the rooms residents stay. Consequently, we can consider a meaningful relationship statistically between the furniture density of the rooms and the satisfaction cases in the level of p<

0.001. Accordingly the furniture density of the rooms has an influence on the satisfaction. Moreover, the complaints about the problems residents experience with the furniture density of the rooms are confirmed by open ended questions. According to this, 17% of the residents mention that the room is too cramped, 13% mention that they can not move comfortably in the room, 7% mention that the room is depressing and 3% mention that the room makes them feel untidiness.

When the satisfaction assessments on the furniture density of the rooms are arranged from positive to negative it is room for 2 > room for 8 > room for 4.

As it is seen in Table 2 and 3 that nearly half of residents are not satisfied with the settlement arrangements and the furniture densities of the equipment elements. This

dissatisfaction might be caused by the fact that the principle stated in TS 11498 [18]: "There must be 5m² per person in the bedrooms in the case that they are used by groups".

Table 4. Satisfaction with the double-deckers in the rooms.

Satisfaction with the Double-Deckers	Room Types							
	Room for 8		Room for 4		Room for 2		Total	
	n	%	n	%	n	%	n	%
Satisfied	65	49	76	55	17	57	158	52.6
Dissatisfied	67	51	62	45	13	43	147	47.3
Total number of residents	132	44	138	46	30	10	300	100

x^2: 1.273,   df: 2,   P = 0.529

According to Table 4, nearly half of residents stated that they are dissatisfied with the double-deckers they use. And according to the result of *Pearson Chi-Square* test, there is no correlation between resident satisfaction and the double-deckers in their rooms. Consequently, we can not consider a meaningful relationship statistically in the level of p<0.05 between double-deckers and resident satisfaction. Accordingly, the double-deckers in the rooms do not have any influence on satisfaction.

Moreover, complaints about the problems residents experience with their double-deckers are identified with open ended questions. According to this, 15% of the residents complained that there were no ladders and banisters at the double-deckers, 11% complained that it was difficult to reach to the bed on top, 10% complained that they were old and noisy, 7% complained that they quaked and %5 complained that they were made of metal.

Table 5. Storing capacity of the cabinets in the rooms.

Storing Capacity of the Cabinets	Room Types							
	Room for 8		Room for 4		Room for 2		Total	
	n	%	n	%	n	%	n	%
Sufficient	26	20	29	21	4	13	59	19.6
Insufficient	106	80	109	79	26	87	241	80.3
Total number of residents	132	44	138	46	30	10	300	100

x^2: 0.920,   df: 2,   P = 0.631

It is seen in Table 5 that nearly all the residents who use each type of rooms find storing capacity of the cabinets insufficient. There is no correlation between storing capacity of the cabinets and residents' sufficiency assessments according to *Pearson Chi-Square* test regarding storing capacity of the cabinets. Consequently we can not consider a meaningful relationship statistically in the level of p<0.05 between storing capacity of the cabinets and sufficiency assessment.

Accordingly, storing capacity of the cabinets does not have any influence on sufficiency assessments. Moreover, residents' complaints about the problems they experience with storing capacity of the cabinets are identified with open ended questions. According to this, 68% of the residents complained that the cabinet was small and 13% complained that there was no drawer in the cabinet.

Table 6. Sufficiency of desks and chairs in the rooms.

Desk and Chairs	Room Types							
	Room for 8		Room for 4		Room for 2		Total	
	n	%	n	%	n	%	n	%
Sufficient	56	42	58	42	25	83	139	46.3
Insufficient	76	58	80	58	5	17	161	53.6
Total number of residents	132	44	138	46	30	10	300	100

x^2: 18.356,   df: 2,   P = 0.000

It is seen in Table 6 that 58% of the residents using the rooms for 8 and 4 find the number of desks and chairs insufficient and 83% of the residents in the rooms for 2 find the number of desks and the chairs in their rooms sufficient. There is a correlation between the number of desks and chairs and the residents' sufficiency

assessments according to the result of *Pearson Chi-Square* test regarding the residents' assessments on the number of desks and chairs in their rooms. Consequently, we can consider a meaningful relationship statistically between the number of desks and chairs in the rooms and the sufficiency assessments in the level of p<0.001. Accordingly the number of desks and chairs in the rooms has an influence on the sufficiency assessments. So when the number of users in the rooms increases, the need for desk and chair increases too. Moreover, the complaints about the problems residents experience with the desks and chairs in their rooms are confirmed by open ended questions. According to this, 45% of the residents

mention that the number of desks and chairs in their rooms are insufficient accordingly with the number of persons in the rooms and 9% mention that the desk is too small. As it is seen clearly in the findings above the hypothesis mentioned in H1 is supported: "Double-deckers, cabinets, desks and chairs in the dormitory rooms do not meet the sleeping, studying and storing needs of the residents."

3.1.1. Requests of residents

Residents' demands for bookshelf, shoe-cabinet and wardrobe in their rooms are given in order in Tables 7, 8 and 9.

Table 7. Demand for bookshelf of the users in the room.

Demand for Bookshelf	**Room Types**							
	Room for 8		Room for 4		Room for 2		Total	
	n	%	n	%	n	%	n	%
Demand	128	97	131	95	27	90	286	95.3
Do not demand	4	3	7	5	3	10	14	4.6
Total number of residents	132	44	138	46	30	10	300	100

x^2: 2.764,   df: 2,   P = 0.251

In Table 7 nearly all residents in each type of rooms demand for bookshelf. According to the result of *Pearson Chi-Square* test regarding the residents' demand for bookshelf in their rooms, a meaningful relation among their demands in the level of p < 0.05 is not found. Therefore, a correlation between the need for a bookshelf and the room type can not be built. Accordingly, it is identified that the need for bookshelf in each type of the

rooms in relation with the number of residents is quite significant. Moreover, the complaints about the problems residents experience about their needs for bookshelf in their rooms are confirmed by open ended questions. 64% of the residents state that there is no space in the cabinets available in their rooms and 32% state that they need bookshelf to abstain from untidiness and to have their books in an appropriate space neatly.

Table 8. Residents' demand for a shoe-cabinet in their rooms.

Demand for a Shoe-Cabinet	**Room Types**							
	Room for 8		Room for 4		Room for 2		Total	
	n	%	n	%	n	%	n	%
Demand	96	73	98	71	24	80	218	72.6
Do not demand	36	27	40	29	6	20	82	27.3
Total number of residents	132	44	138	46	30	10	300	100

x^2: 1.002,   df: 2,   P = 0.606

In Table 8, a great number of residents in each 3 type rooms demand for a shoe-cabinet. According to the result of *Pearson Chi-Square* test regarding residents' demand for shoe-cabinet a meaningful relation among residents' demands for shoe-cabinet in the level of p<0.05 is not found. Accordingly, a correlation between the need for shoe-cabinet and the type of the room can not be built. Consequently it is identified that the need for shoe-cabinet in the rooms in relation with the number of

residents is quite significant. Moreover, the complaints about the problems residents experience regarding their need for a shoe-cabinet are confirmed by open ended questions. According to this, 30% of the residents state that there is no space in the cabinets available in their rooms, 31% state that they demand it for tidiness of their rooms and to increase the use of room and 10% state that they demand it to prevent floors from getting dusty.

Table 9. Residents' demand for a larger wardrobe in their rooms.

Demand for Wardrobe	Room Types							
	Room for 8		Room for 4		Room for 2		Total	
	n	%	n	%	n	%	n	%
Demand	75	56.8	89	64.4	18	60	182	60.6
Do not demand	57	43.1	49	35.5	12	40	118	39.3
Total number of residents	132	44	138	46	30	10	300	100

x^2: 1.601,   df: 2,   P = 0.449

In Table 9, more than half of residents in each 3 type of rooms demand for a wardrobe in their rooms. According to the result of *Pearson Chi-Square* test regarding the residents' demands for a larger wardrobe instead of available one in their rooms a meaningful relation among the residents' demands for wardrobe in the level of $p < 0.05$ can not be found. Accordingly a correlation between the need for a wardrobe and the type of the room can not be built. Consequently, it is identified that the need for wardrobe in the rooms depending on the number of residents in the rooms is quite significant. Moreover, the complaints about the problems that residents experience regarding their needs for a wardrobe are confirmed by open ended questions. According to this, 30% of the

residents state that the available cabinet in their rooms has not enough space for their clothes, 20% state that they want to keep their clothes ironed and more neatly and 11% state that they want to keep their clothes clean and safe.

According to the Tables 7, 8 and 9 it is identified that nearly all residents demand for a bookshelf and more than half of the residents demand for a shoe-cabinet and a bigger wardrobe in their rooms. It appears in this result that daily basic needs become more prominent for the fact that the students' demands are not met in the rooms they stay. Room preferences of the residents regarding the resident numbers are given in Table 10.

Table 10. Residents' room preferences according to the numbers of residents they want to stay with.

Room Preferences of Residents	Room Types							
	Room for 8		Room for 4		Room for 2		Total	
	n	%	n	%	n	%	n	%
Room for 1	18	13.6	30	21.7	15	50	63	21
Room for 2	46	34.8	73	52.8	13	43.3	132	44
Room for 4	50	37.8	33	23.9	-	0	83	27.6
Room for 6	10	7.5	2	1.44	-	0	12	4
Room for 8	8	6.06	-	-	2	6.6	10	3.3
Total	132	44	138	46	30	10	300	100

x^2: 51.300,   df: 8,   P = 0.000

In Table 10, 34.8% of residents staying in the rooms for 8, 52.8% of those staying in the rooms for 4 and 43.3% of those staying in the rooms for two stated that they'd prefer staying in the rooms for 2. According to the result of *Pearson Chi-Square* test regarding room preferences of the residents we can consider a meaningful relationship among resident opinions on the rooms they would like to stay in the level of $p < 0.05$. Accordingly residents would prefer the rooms in where fewer people stay than their own rooms.

3.2. Perceptual Performance Analysis of the Rooms

Reliability of the dependent variables for perceptual assessments of the residents using the rooms that have 3 different types of plans in *Zubeyde Hanim Sorority* which is included in the scope of this research is tested by "Cronbach alpha". According to this, reliability

coefficient of the semantic differentiation measure is 0.90. In the previous works by Bagozzi and Yi [28]; McKinley et. al. [29]; Bosma et. al. [30]; Jayasinghe et. al. [31]; Grewal et. al. [32]; Kim and Jin [33] and Pektas and Erkip [34] it was stated that when the alpha reliability coefficients for all elements are over 0.70 it could be considered "reliable". Accordingly the Cronbach alpha coefficient gained in the work is over the value stated. Consequently, the semantic differentiation measure is found "reliable".

Categorical mediums, standard deviation values and homogeneity groups of data belonging to perceptual assessments of the residents in relation to architectural type and furnishing settlement arrangements of the sorority rooms which is included in the scope of this research are given in Table 11.

Table 11. Average, standard deviation values and homogeneity groups of dependent variables.

| **Dependent Variables** | **Room Types** | | | | | | | | |
| | Room for 8 | | | Room for 4 | | | Room for 2 | | |
	M	SD	HG	M	SD	HG	M	SD	HG
happy / unhappy	4.32[a]	1.92	A	4.30	2.01	A	3.60	1.79	A
peaceful / unpeaceful	4.13	2.08	A	5.22	1.89	B	3.86	2.16	A
spacious / boring	4.27	1.94	B	4.09	1.98	AB	3.40	2.01	A
warm / cold	2.57	1.96	A	3.17	2.07	A	3.10	2.12	A
bright / dark	2.63	1.83	A	4.32	2.27	B	2.75	1.88	A
attractive / unattractive	4.51	1.97	AB	5.02	1.90	B	3.72	1.81	A
pleasant / unpleasant	4.62	2.06	B	5.01	1.78	B	3.53	1.81	A
active / stationary	3.60	2.23	A	4.33	2.22	A	4.41	1.86	A
calm / restless	5.04	1.94	B	4.68	1.93	B	3.66	2.00	A
comfortable / uncomfortable	4.99	2.03	B	5.17	1.81	B	3.66	2.00	A

Note: M: Average Value, SD: Standard Deviation, HG: Homogeneity Group

a: Variable means ranged from 1 to 7, with higher numbers representing more negative response

In Table 11, it is confirmed that perceptual assessments of the residents using the rooms in three different plans are different. It can be pointed out when looking at the average values that the rooms for 2 persons are perceived and commented positively in terms of the assessments of space quality in comparison respectively with the rooms for 8 and 4 persons.

The differentiation among perceptual performance assessments of the residents about 3 different type sorority rooms is tested by the one variation analysis (ANOVA). Accordingly, the differences among dependent variables including perceptual quality of three different types of sorority rooms except the adjective pairs that happy / unhappy (F=1.804; df=2; P=0.166) and peaceful / unpeaceful (F=2.401; df=2; P=0.092) for other adjective pairs that spacious / boring (F=12.002; df=2; P=0.000); warm / cold (F=3.108; df=2; P=0.046); bright/ dark (F= 23.804; df=2; P=0.000); attractive / unattractive (F=6.147; df=2; P= 0.002); pleasant / unpleasant (F=7.433; df=2; P=0.001); active / stationary (F=4.146; df=2; P=0.017); calm / restless (F=7.650; df=2; P=0.001) and comfortable / uncomfortable (F=7.523; df=2; P=0.001) are found meaningful statistically in the level of

p< 0.05. Therefore, it can be pointed out that the differences among architectural and internal designs of three different sorority rooms have a significant influence on perceptual performance of the residents. If the perceptual assessment results are put in an order from positive to negative it is rooms for 2 persons > rooms for 8 persons > rooms for 4 persons. This result supports the hypothesis given in H2. Accordingly, it is seen that rather than the similar featured double-decker, cabinet, desk and chair given to each resident room's architectural features and the differences in settlement arrangements are influential.

Gained data to compare the average values of the differences among the perceptual quality assessments about three types of sorority rooms belonging to variation sources which were found meaningful in the variation analysis is given in Figure 3 diagrammatically. According to this, it is seen in space quality perception of the residents for each dependent variable that generally the rooms for 2 persons are assessed with smaller (positive) values but the rooms for 8 and 4 persons are assessed with larger (negative) values.
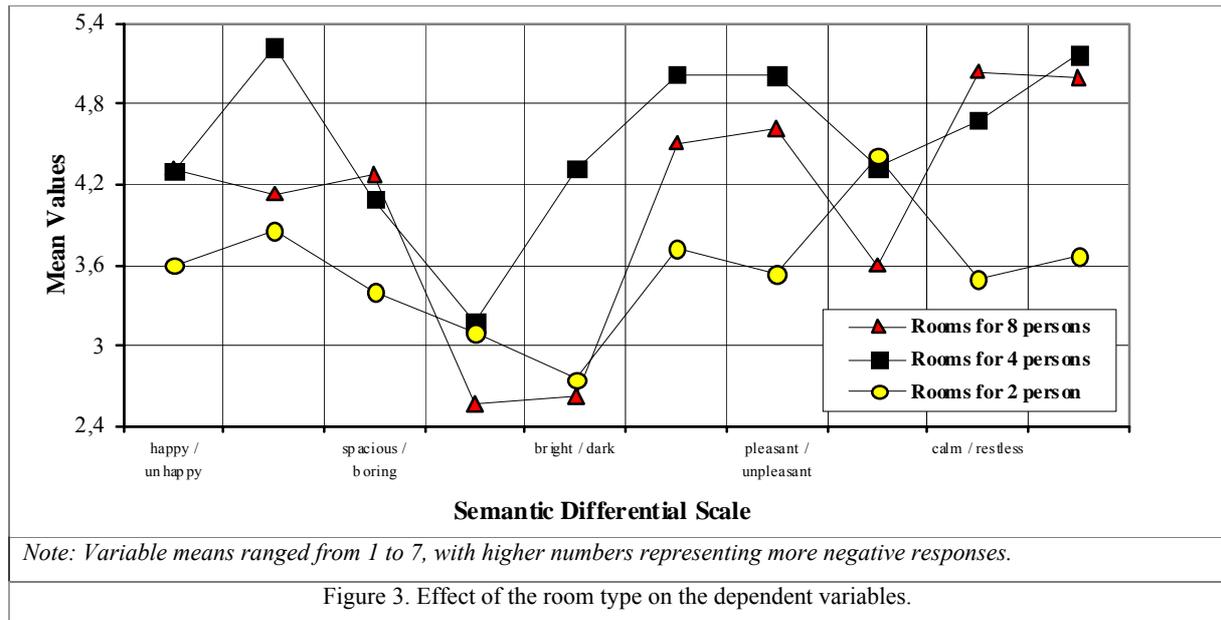
Note: *Variable means ranged from 1 to 7, with higher numbers representing more negative responses.*

Figure 3. Effect of the room type on the dependent variables.

4. CONCLUSION AND SUGGESTIONS

A meaningful relationship between settlement arrangements and density of equipment elements and residents' satisfaction are identified. Accordingly, settlement arrangements and furniture density of the rooms have an influence on satisfaction. If satisfaction assessments of settlement arrangements and furniture density of the rooms are arrayed from positive to negative it is rooms for 2 persons > rooms for 8 persons > rooms for 4 persons. The reason for this arraying while it is expected to be as rooms for 2 persons, rooms for 4 persons and rooms for 8 persons might be the fact that despite the room for 4 persons is 2.5 m² bigger than the room for 2 persons 2 more persons are placed in this area. According to TS 11498 [18] it is thought that since the item as "in the case of the use of the rooms as bedrooms the square measure as at least 5 m² per person must be grounded" is not applied that's the reason that the rooms for 4 persons are perceived more negative. Moving from this point, it is useful to arrange the rooms for 4 persons as rooms for 2 persons and to arrange the rooms for 8 persons as rooms for 6 persons in order to increase space quality and accordingly to provide comfort to residents.

According to another conclusion, it is seen that a significant part of the residents are not satisfied because they find double-decker, cabinet, desk and chair in their rooms insufficient. Accordingly, it will be useful to add a ladder to facilitate residents to climb up to top bed and banisters to make residents safer in their bet. al. in order to remove residents' dissatisfaction with the double-deckers and in this way residents will be safe while sleeping. In double-decker production instead of metal, materials like wood might be preferred. Wardrobes which have larger storing space and be able to meet the needs of hanger, shelf and drawer for residents' clothes to be stored neatly must be used. Sufficient number of desks and chairs must be placed and the number of residents in the rooms must be considered for the residents to study more comfortably. For instance, a desk and 4 chairs can be added to the rooms for 8 persons. Moreover, it is useful to replace the chairs with the ones with more suitable furnishing to human posture.

For another conclusion, it is identified that most residents want a bookshelf and a shoe cabinet in their rooms. It is an indication for the fact that some students use mobile bookshelves and shoe cabinets in addition to the available equipment elements in their rooms that the available equipment elements in the rooms are insufficient. Therefore, decorative bookshelves might be installed on the suitable empty walls in the rooms and covered drawers might be placed under the double-deckers for the shoes to be put or a shoe cabinet can be placed in a suitable space inside the wardrobe.

In another conclusion, residents want to stay in the rooms in which less people stay than their own rooms. This conclusion supports the claim considered in Altman [12] as the increase in the number of people staying in a space causes the increase in social interaction, decrease in personal space and unwanted social interactions and the conclusion made in Jineson and Sehva [14] that the satisfaction with a room is related to the number of people staying in the room. Also this conclusion agrees with the claim by Guler and Coban [13] that the case that the population per room is over 1.5 persons decreases the health standard of the space.

Moreover, the differences among perceptual performance assessments of the residents about three different type sorority rooms are found meaningful statistically for the adjective pairs of spacious / boring, warm / cold, bright / dark, attractive / unattractive, pleasant / unpleasant, active / stationary, calm / restless and comfortable / uncomfortable except the adjective pairs of happy / unhappy and peaceful / unpeaceful. According to this, it can be pointed out that the differences among architectural and internal designs of these three different types of sorority rooms have a significant influence on residents' perceptual performance. If the results for perceptual assessments of the rooms is arrayed from positive to negative it is rooms for 2 persons > rooms for 8 persons > rooms for 4 persons. Therefore, for the different perceptions of the rooms it is considered that the differences in settlement arrangements depending on furniture density and the architectural features of the rooms rather than the insufficiency of internal equipment elements are more influential. This conclusion supports

the conclusion of Kaya and Erkip [16] that the perception of a more spacious room increases the satisfaction. It is also seen that this conclusion supports the conclusion in Jinseon and Sehva [14] that satisfaction with the room is related to the personal space in the room. The arraying for the rates of personal space is rooms for 2 persons > rooms for 8 persons > rooms for 4 persons. According to this, the perception of the room for 2 persons (9.1 m²) is more positively than the rooms for 8 persons (27.3 m²) and the room for 4 persons (11.5 m²) supports the standard identified in TS 11498 [18] that "in the case of the group use of bedrooms, 5m² square measure must be grounded". As a consequent, in positive perception of the spaces, it is seen that size of the room and the personal space related to the furniture density are influential rather than the number of the residents staying in the room. In addition to the conclusions above obeying the general rules identified in TS 11498 standards in designing the new dormitory rooms will contribute the improvement of higher education students who will direct our future significantly.

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