THE IMPACT OF SOCIOFUGAL AND SOCIOPETAL ATTRIBUTES OF UNIVERSITY DORMITORY LOUNGES ON SOCIAL INTERACTION OF RESIDENTS

by

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INTRODUCTION AND LITERATURE REVIEW

This research will empirically study the impact of sociofugal and sociopetal characteristics of public waiting rooms in university dormitories on social interaction among dorm users. Sociofugal and sociopetal characteristics of spaces as defined in this study follow Osmond's (1957) definition: "Sociofugality of spaces prevents or discourages the formation of stable human interaction. Sociopetality is that spatial quality that encourages, fosters and even enforces the development of stable interpersonal relationships."

The concepts of sociofugal and sociopetal spaces deserve special attention at macro as well as the microscale environment. The distinction between fixed-feature elements (walls, ceilings, floors) and semifixed-feature elements (furniture, curtains, street furniture) originally presented by Hall (1966) and more recently explained by Rapoport (1982) was useful in defining environmental attributes affecting social behavior.

Although there is little precedent for the study of sociofugal and sociopetal spaces and their relationship to social interaction in university dormitory lounges, some authors have found important relationships between these

variables in other settings. A selected review of those studies is presented below.

Room Proportions and Furniture Arrangement

Osmond (1957) has pointed out that when the width to length ratio of an indoor environment (e.g. corridors) is about 1 to 5, (0.20), the space should be considered sociofugal in nature. He states that:

> "Corridors, which are high in sociofugality, are admirably suited for keeping people on the move, but ill-suited for developing interpersonal relationships...and we should attempt to reduce corridors to a minimum in buildings in which we wish to encourage the growth of interpersonal relationships. (p.567)"

Similarly, using observational techniques during a two week period in a mental hospital, Sommer and Gilliland (1962) found that over 40% of the friendless residents isolated themselves in corridors. Their study suggested that long corridors should be avoided. These researchers pointed out that if corridors are to be included, they should be constructed in such a way that they cannot be used as residential areas. Although these studies focused on the corridor setting, the issue of length to width may well apply to non circulation spaces as well (e.g. rooms).

In another study, observing typical behaviors of elderly people in housing projects, Lawton (1970) found that areas around the front door and the elevator entrance constitutes the center from which other activity spreads. He states:

> "That informal social spaces located at the center of things had five times as many users as equally attractive spaces located peripherally as at ends of halls or on upper floors. (p.375)"

Koncelik (1976) pointed out that lounges in nursing homes near building entrances or at the intersection of hallways provide access to high activity levels often conducive to effective interchange among users. He also observed that:

> "Lobbies,laundry rooms, pharmacy, waiting areas and the like, seem to draw people by virtue of some externalized stimulus (watching others) or where there is a commonalty of purpose (getting drugs). (p.32)"

Observing an airport lounge, Jacobson (1974) discovered that parallel seating so often found in public waiting spaces did not allow for either comfortable conversation or adequate levels of privacy. Based on answers from 36 passengers interviewed, he proposed the inclusion of

seats around small tables to provide good conversation configuration for different size groups. Pendell and McBride (1980) found an increase in conversation after remodeling work in a hospital lobby (i.e. replacement and change of outer door as well as lightweight chairs replacing bench-type seating). At a more microscale, Sommmer & Ross (1958) found an increase in social interaction among patients in a psychiatric ward by simply changing the placement of four chairs around small tables rather than around the perimeter of the room. Similarly, Sommer and Dewar (1963) using observational techniques in a psychiatric hospital, noted that visitors voluntarily re-arranged chairs originally placed in straight rows (shoulder to shoulder) against the walls, into small groups of chairs that provided more comfortable conversation. Batchelor and Goethals (1972) found in a laboratory experiment that students spontaneously chose circular arrangements of chairs when asked to discuss a joint case-study.

Finally, Hall (1966) argued that the back-to-back seating arrangement is an appropriate solution to minimum space because it is possible for two people to stay uninvolved if that is their desire. As an anecdotal comment, he stated that:

> "Some men have discovered that their wives have arranged the furniture back-to-back as a favorite sociofugal device. (p.123)"

Social Distances and Social Interaction

Hall (1966) coined the term "proxemics" to define the human's use of distance in social interaction. This concept, derived from "proximity", identifies adequate interpersonal distances for social interaction. Research conducted by Hall (1963, 1966, 1971), Kunnapas (1960), Patterson (1978), Brill (1970) and Sommer (1969) seem to agree that the most conducive distances for social interaction ranges from two to nine feet (with no interaction barriers between individuals). Therefore, this study will utilize this range in operationally defining sociofugal and sociopetal space characteristics.

Social Intraction Behavior

Ittelson et al. (1970) have defined social behavior as all behavior that primarily involves interaction between two or more people. Six analytical categories of social behavior were used by Ittelson to study resident behavior in a psychiatric ward: social (person-to-person verbal interaction); mixed-active (person watching others); isolated active (person reading or writing); isolated-passive (person sleeping); miscellaneous, and traffic behavior (person moving from one place to another). These same six categories will be used in this study as the dependent variable.

Rationale

The above literature review suggests several environmental attributes that may be conducive to social interaction among dormitory residents. A more basic question to be addressed by this study is the feasibility of developing operational definitions os sociopetal and sociofugal spaces. The proportion of room length to width, the furniture arrangement and the furniture density are the primary variables affecting social interaction and became the operational definition of sociopetality and sociofugality in this study. The dependent variable, social behavior, is based on the six categories developed by Ittelson et al. (1970) mentioned above. Therefore, this study will specifically attempt to account for the social behavior of dorm users by the assessment of the sociofugal and sociopetal characteristics of waiting rooms in selected dormitories at Kansas State University.

This study is important because the concepts of sociofugal and sociopetal spaces have not been empirically studied regarding social behavior. In addition, designers have little understanding of how to design waiting rooms. This study will shed light on some architectural elements that may contribute to social behavior. Behavioral scientists may also learn about small group ecology and the role physical environment play in accounting for human behavior.

METHODS AND PROCEDURES

The Setting

The public waiting rooms in the following five dormitories at Kansas State University were the settings selected for research: Edwards, Goodnow, Haymaker, Moore and West Hall. Table 1 presents general characteristics of the settings at the time the study was conducted. Most of the dorms are considered highrise structures, with Haymaker and Moore Hall having the most floors. These dorms have undergraduate occupancy and are the most populated, with 648 and 647 students respectively. Edwards Hall, on the other hand, is a low structure housing only graduate students and comprising the lowest number of residents among all the dorms. Figures 1 through 5 present the floor plans of the areas under study. Each dormitory waiting room was divided into subareas for more detailed measurement. Area subdivision was made on the basis of naturally occurring boundary characteristics including columns, partitions, and carpeted areas. The area lables and chair numbering will be explained later in this chapter. See appendix for more detailed information concerning the location of the waiting rooms within each dormitory.

The Sample

The subjects in this study were users of the public waiting rooms in each dormitory setting. Because all settings were university facilities, primarily young adult college students of both sexes were observed.

Operational Definition of Variables

Length to width ratio, furniture arrangement, and furniture density were the variables comprising the independent measure in this study. Social behavior, and particularly verbal interaction was the dependent variable. A detailed definition of each of these is given below.

Width to Length Ratio

Based on earlier studies by Osmond (1957), an index relating width to length of the space (WLR) was developed using the following formula:

$$WLR = \frac{\text{Width of the space}}{\text{Length of the space}}$$

TABLE 1

Descriptive Dormitory Characteristics

Charact.	Dormitory: Edwards	Goodnow	Haymaker	Moore	West
Number of floors	2	6	9	9	5
Number of wings	4	3	2	2	2
Visitation: open	yes	yes	yes	yes	no
Class level[1]	G	UG	UG	UG	UG
Gender Occupancy	coed	coed	male	coed	female
Female	32	400	---	203	315
Male	160	200	648	444	---
Total Population (*)	192	600	648	647	315

* Includes only residential floors.

1. G = graduate; UG = undergraduate

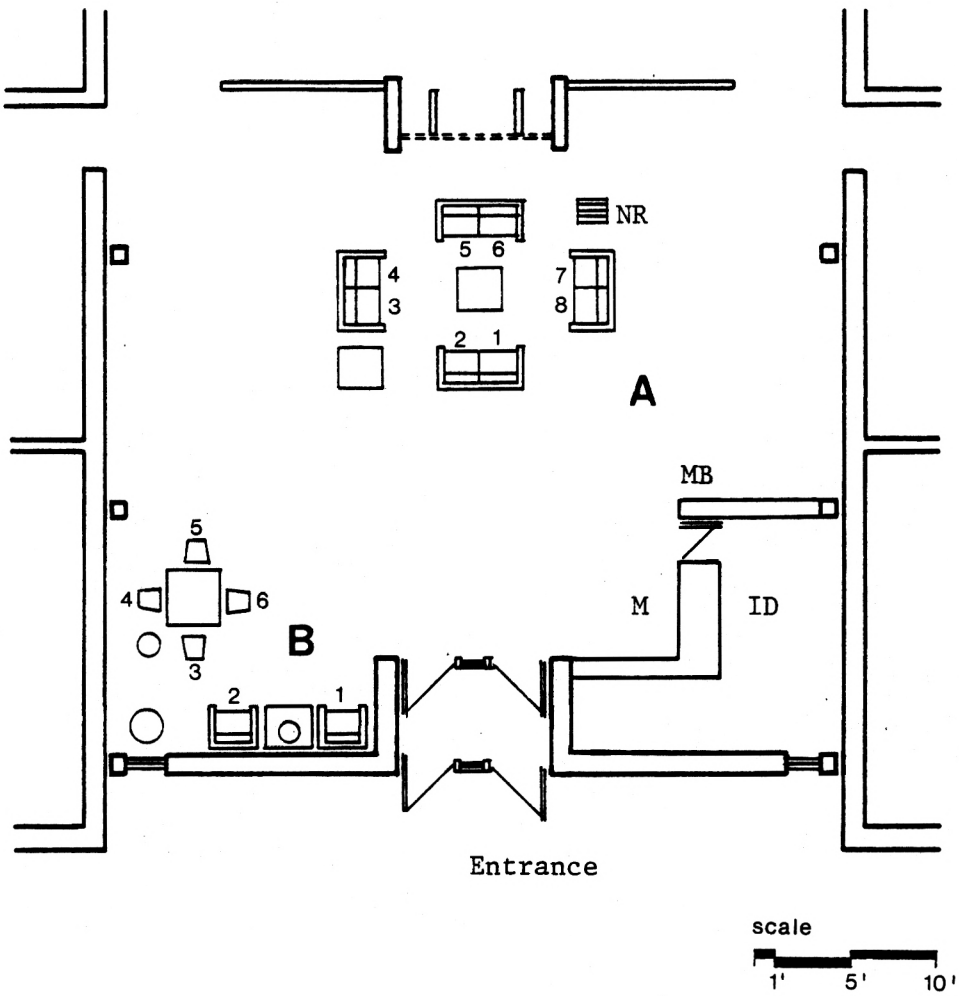
Furniture Arrangement

Based on the literature review previously presented and the concept of conversational distance, furniture arrangement was evaluated regarding the degree of suitability for verbal interaction. The inward oriented cluster-type was judged most conducive for interaction, while the least facilitating arrangement was back-to-back. As previously defined, the conversational distance criterion employed in this study ranged from two to nine feet with no conversational barriers between individuals. Thus, chair clusters not falling between these parameters were considered sociofugal in nature.

The range of typical furniture arrangement clusters found across the waiting rooms are presented in Table 2 with the rank score assigned by the author. A furniture arrangement score (FAS) was developed for each observational area based on these ranks using the following formula:

$$FAS = \frac{\text{Sum of rank points for a given seating arrangement}}{\text{Total number of furniture arrangement}}$$

Figure 1. Waiting Room in Edwards Hall



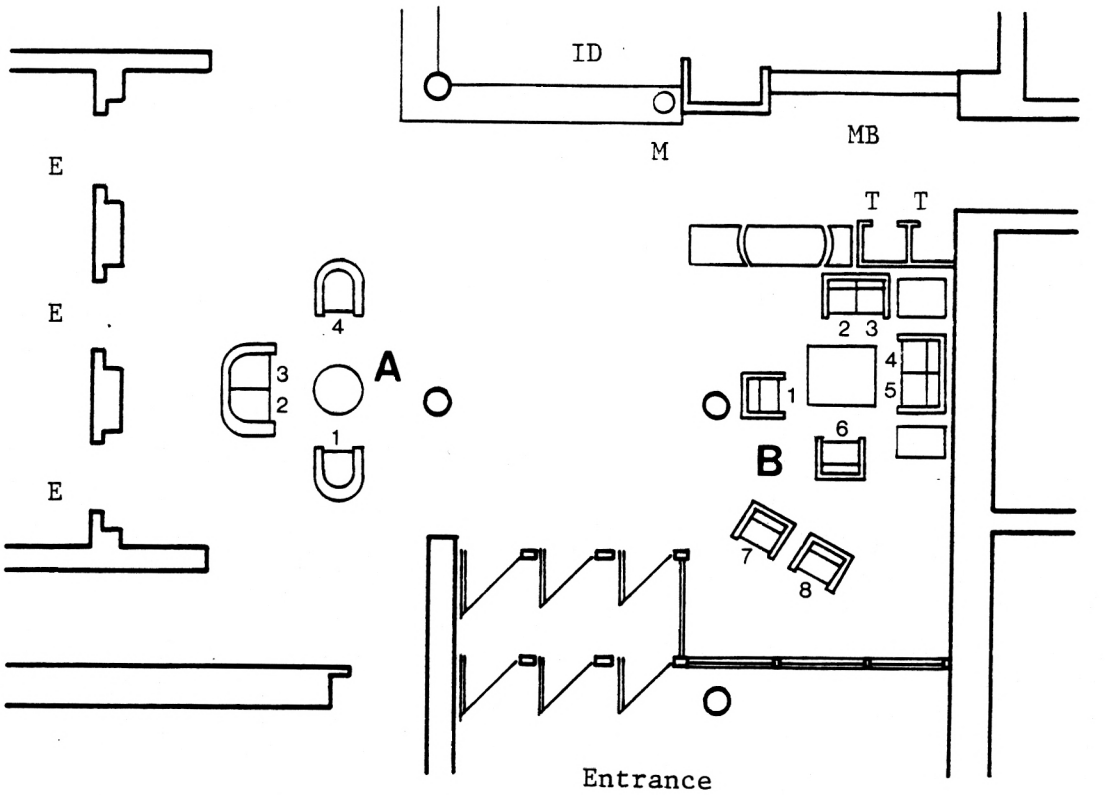
ID = Information desk

M = Messages

MB = Mail box

NR = Newspaper rack

Figure 2. Waiting Room in Goodnow Hall



E = Elevator

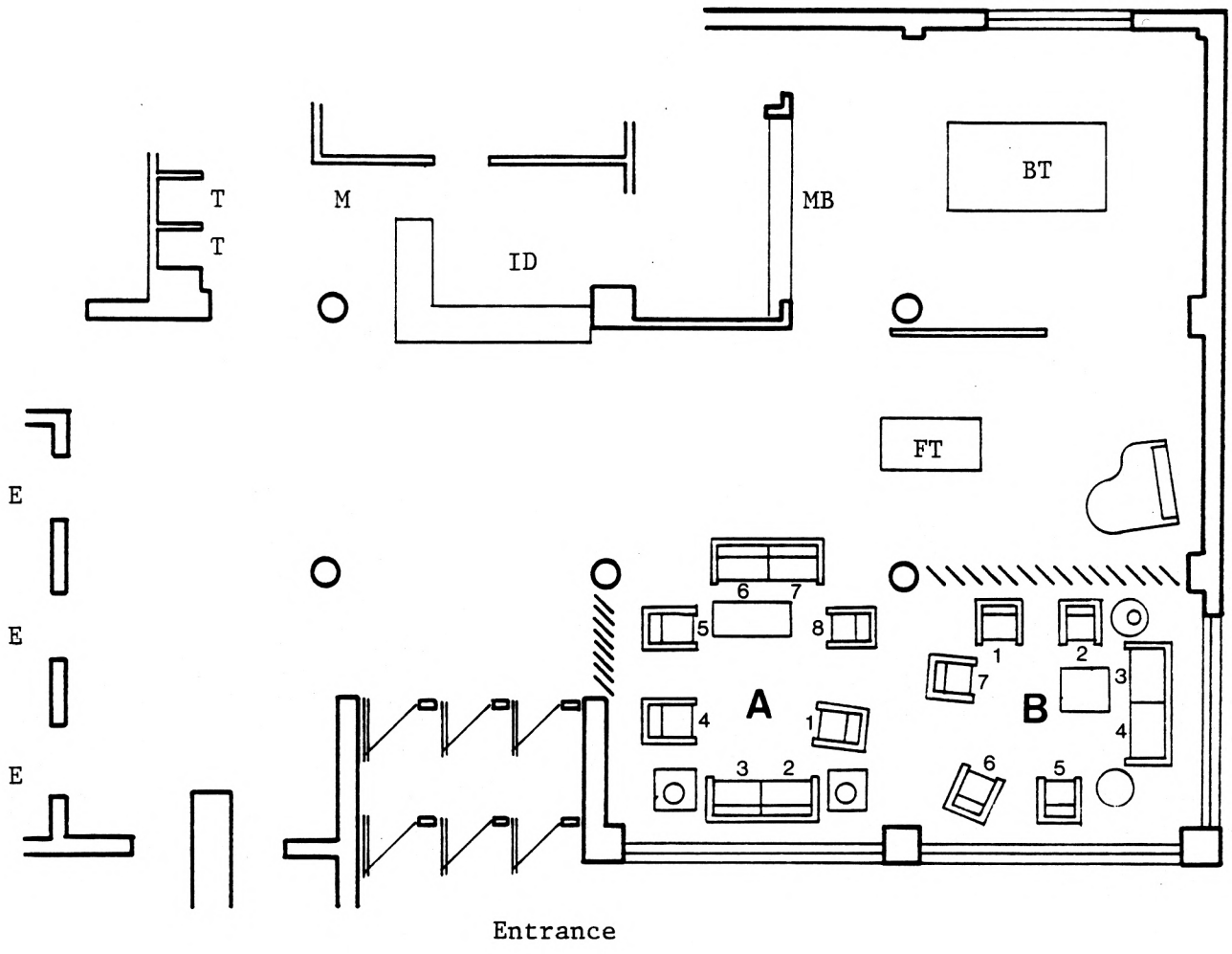
ID = Information desk

M = Messages

MB = Mail box

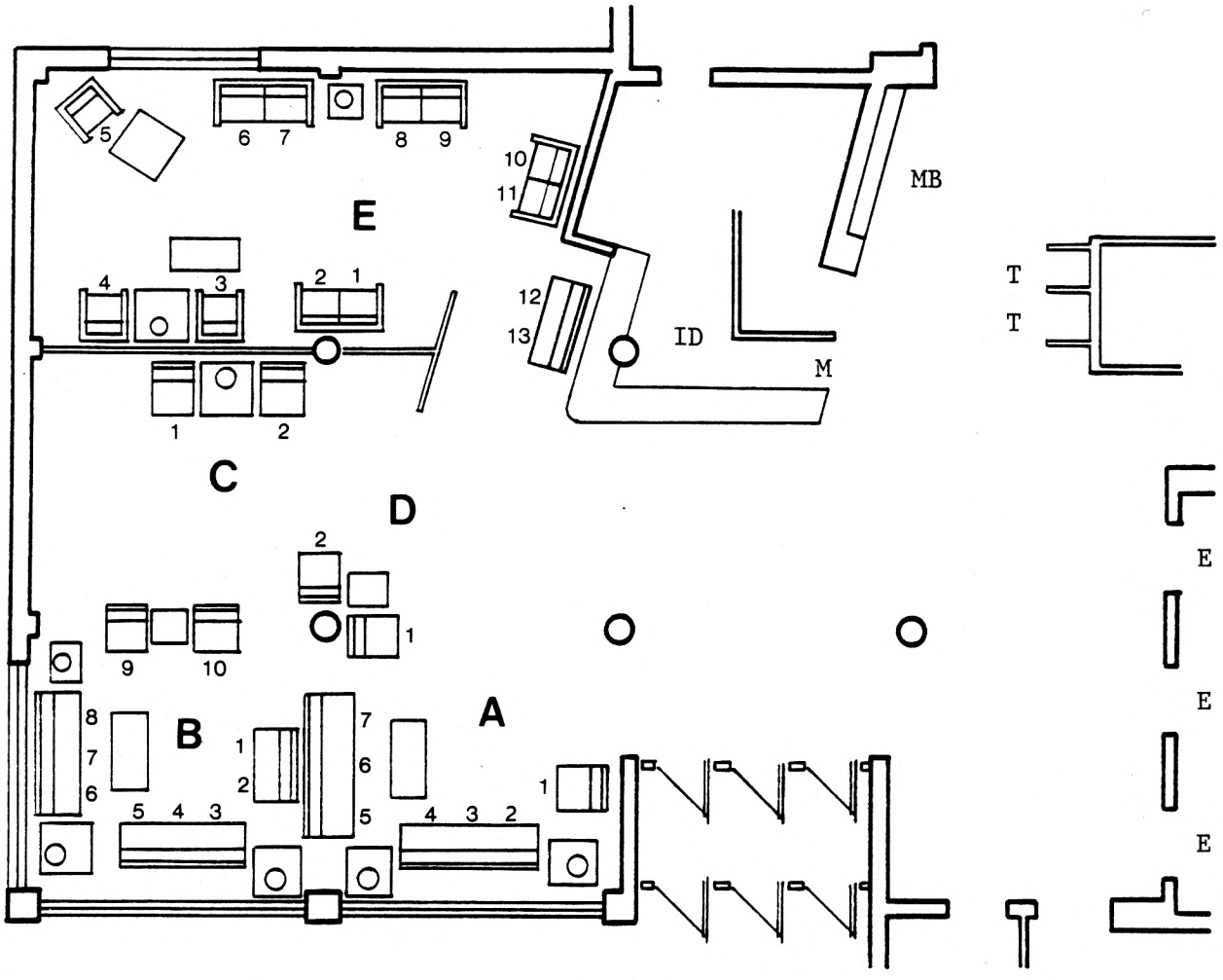
T = Telephone

Figure 3. Waiting Room in Haymaker Hall



BT = Billiard table
E = Elevator
FT = 'Foosball table'
ID = Information desk
M = Messages
MB = Mail box
T = Telephone

Figure 4. Waiting Room in Moore Hall



E = Elevator

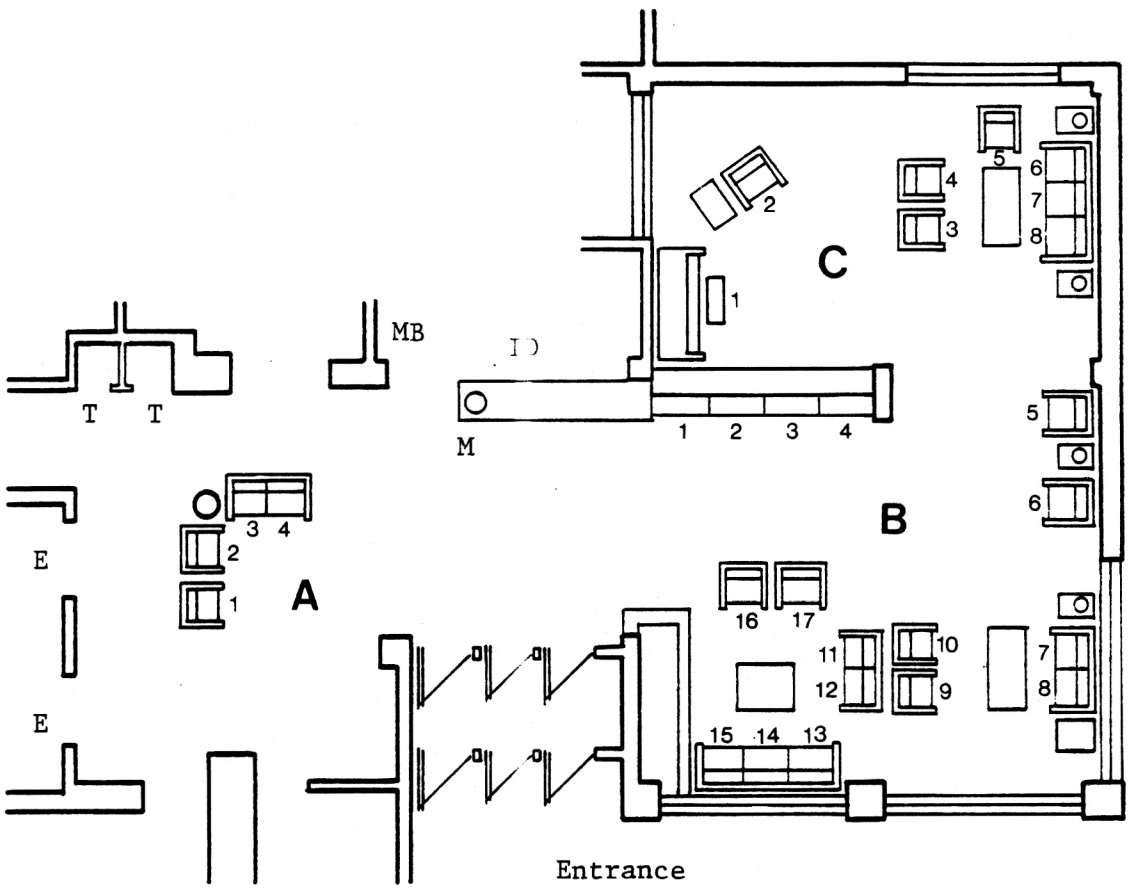
ID = Information desk

M = Messages

MB = Mail box

T = Telephone

Figure 5. Waiting Room in West Hall



E = Elevator

ID = Information desk

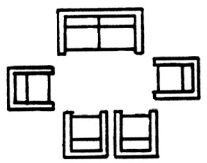
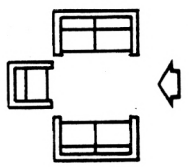
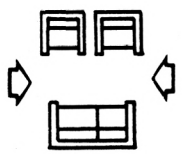
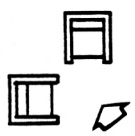
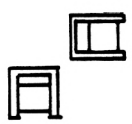
M = Messages

MB = Mail box

T = Telephone

TABLE 2

Ranks for Furniture Arrangements varying in Suitability for Social Interaction

Classification System		Rank points
4 sides closed. "cluster"		7
One side open		6
Front		5
L - shape		4
Side-by-side		3
Facing outside		2
One chair		1

Furniture Density

A ratio relating the number of chairs per square foot (FD) was developed for each observational area using the following formula:

$$FD = \frac{\text{Number of chairs}}{\text{Total area in sq. ft.}} \times 100$$

Sociopetality Score

A "Sociopetality" score (SS) was calculated for each area within each dorm and consisted of the sum of the three components described above: width to length ratio (WLR), furniture arrangement (FAS), and furniture density (FD). For example, a space potentially very conducive to social interaction would result in a combination of a length to width ratio score close to 1.00 (almost square), a predominantly cluster-type furniture arrangement well within the limits of the conversational distance as previously defined and a high furniture density ratio.

As an example, the Sociopetality score for observational area B in Edwards Hall (see Figure 1) is described below. Width = 13' , length = 15' , WLR = 0.87; chairs # 3 through 6 are within the conversational distance as pre-

viously defined in a cluster-type arrangement and were assigned a rank of 7 points; chairs # 1 and 2, in a side-by-side arrangement, were given a score of 3. (see Table 2). Adding these two scores and dividing by the number of furniture arrangements for that area (in this case, 2), the furniture arrangement score of 5.0 was obtained. Next, the Furniture density score was obtained as follows: # chairs = 6, and room area = 195 square feet; 6/195 = .0461; then FD = 4.61. Thus, the width to length ratio (WLR), furniture arrangement (FAS) and furniture density (FD) values were added (0.87 + 5.0 + 4.61) to get the correspondent Sociopetality score = 10.48. At the dormitory level, the Sociopetality scores were obtained by adding sociopetality scores for each observational area and dividing this number by the number of observational areas in the waiting room. Thus, the sociopetality score (SS) for area B was 10.48 and SS for area A was 5.52 yielding a total sociopetality score for Edwards Hall of 8.00. The same criteria were applied to the remaining observational areas in the other dormitories.

Table 3 and Table 4 present in rank order the Sociopetality scores obtained for each observational area and for each dormitory respectively. A high score in these tables indicates greater potential for social interaction. From Table 3 we can see that areas A and B in Haymaker Hall have a very similar and fairly high sociope-

tality score, 7.88 and 7.73 respectively. In contrast, areas A and B in Moore Hall have a fairly high sociopetality score; areas C and D in the same dorm have a very low sociopetality score. Finally, areas within Edwards, Goodnow and West Hall vary widely in their sociopetality score. Sociopetality scores for dormitories in Table 4 do not vary greatly. However, the range from the lowest sociopetality score of 5.64 for Moore Hall to the highest score of 8.00 for Edwards Hall is moderate.

TABLE 3

Ranked Mean SS for Observational Areas

Dormitory	Area	WLR	FAS	FD	SS
Edwards	B	0.87	5.0	4.61	10.48
West	B	0.85	4.7	2.81	8.36
Goodnow	B	0.69	5.0	2.42	8.11
Haymaker	A	0.94	4.0	2.94	7.88
Haymaker	B	1.00	4.0	2.73	7.73
Moore	B	1.00	2.7	3.90	7.60
Moore	A	1.00	2.5	2.73	6.23
West	C	0.60	3.5	1.89	5.99
Moore	E	0.50	2.0	3.31	5.81
West	A	0.73	4.0	1.06	5.79
Goodnow	A	0.75	4.0	0.92	5.67
Edwards	A	0.61	4.0	0.91	5.52
Moore	C	1.00	3.0	0.78	4.78
Moore	D	1.00	2.0	0.78	3.78

Note: WLR = Width to length ratio
FAS = Furniture arrangement score
FD = Furniture density
SS = Sociopetality score

TABLE 4

Ranked Mean SS for Dormitories

Dormitory	SS
Edwards	8.00
Haymaker	7.81
Goodnow	6.89
West	6.71
Moore	5.64

Note: SS = Sociopetality score

Social Behavior

To obtain a social behavior score for each observational area, the analytical categories of behavior used in this study were ranked as follows: Verbal Interaction = 6, Mixed-Active = 5, Isolated-Active = 4, Isolated-Passive = 3, Traffic Behavior = 2, and Miscellaneous = 1 . In the analysis of each mapping sheet, at the observational area level, each person observed in the space was given one of these scores depending upon the level of social behavior engaged in by the subject. Next, these scores were summed and then divided by the total number of persons at that time to obtain a SBE score for that observational period. Finally, a Social Behavior (SBE) mean score was obtained at the observational area level and subsequently at the dormitory level. The maximum possible score would be 6.00 indicating that all the individuals in the observational area were engaged in verbal interaction during all the ob-

servation periods. The SBE scores obtained at the observational area and dormitory level are presented in Chapter 3.

Collection of Data

Informal interviews were conducted with dormitory directors to obtain their cooperation. These directors provided useful information about expected behaviors to be observed as well as the best hours in which to conduct the final observations. Preliminary observations were made prior to final data collection to become familiar with the settings and record social behavior according to the six categories.

Two methods were used to collect and record these data: 1) systematic observation of users in the waiting rooms using the behavioral mapping technique, and 2) unobtrusive measures regarding furniture re-arrangement made by the users. In addition, field notes were used to record particular incidents related to how people interact with the setting in general or specific objects within it (e.g., person resting on the floor, writing on the chair arm).

Behavioral Mapping

A technique developed by Ittelson et al., (1970) crosstabulates the six social behavior categories previously presented with physical location of users in an institutional facility waiting room. A behavior mapping sheet was designed to record the user's sex, age group, observed behavior and physical location. This technique was adopted for use in this study.

As discussed earlier, each waiting room was subdivided into smaller 'observational areas' and comprised the unit of observation in this study. Within each observational area chairs were numbered sequentially and linked to subsequent observed behaviors as shown in Figures 1 through 5 . All the observations were made by the author. See appendix for a representative sample of a mapping sheet used in this study.

Observations were conducted during four consecutive weeks in the Fall of 1982. Each waiting room was observed one time every week for a total of four observation periods: two were on a time sampling basis (randomly selected from 8.00 a.m. to 3.45 p.m.) and the other two on an event sampling basis (randomly selected from 4.00 to 7.00 p.m.). The event observations were conducted during dinner time, when according to information previously provided by the dormitory directors, more people were expected to be using the waiting rooms. No observations were con-

ducting during special days (e.g., open house, game days). Before the observation period began, the date, time, as well as some environmental and physical conditions (e.g., weather conditions, background music, lighting conditions) were recorded on the mapping sheets. After noting the location of the observer, each chair was observed in sequential order recording for each chair the user's sex, age group and degree of observed social behavior.

FINDINGS

This chapter presents the results regarding two main questions: Can sociopetal and sociofugal spaces be operationally defined? Are these concepts related to the social behavior of users?

To test whether or not the Social behavior scores (SBE) were significantly different at the dormitory and observational area levels, an analysis of variance procedure was conducted (see Table 5). In this table SBE score differences are observed at both dorm and area levels, however Tables 6 and 7 show that differences occur more often at the observational area level.

TABLE 5

ANOVA for the SBE scores for Dormitories and Areas

Source	DF	Mean Square	F value	PR > F
Dorm	4		2.58	0.0409
Area	7		7.03	0.0001
Error	112	170.77		

In Table 6 only the social behavior scores for Haymaker Hall are significantly different from the other dor-

mitories. Thus, meaningful differences were not observed at the dormitory level.

TABLE 6

Duncan Procedure with SBE scores at the Dormitory level

Dormitory	N	Mean	Groupings (*)
Edwards	24	4.375	a
Goodnow	27	4.200	a
West	45	4.122	a
Moore	15	3.973	a
Haymaker	13	3.076	b

* Means with same letter are not significantly different.

However, in Table 7, there is a great diversity in the social behavior (SBE) scores. The highest possible score is 6.00 indicating that all the observed persons in the area were engaged in verbal interaction. The lowest possible score in this table is 2.00 indicating that all the observed persons were engaged basically in non-social behavior (traffic behavior). Some interesting patterns can be observed in Table 7: First, areas B in Edwards and Moore Hall possess a very high social behavior score (5.87 and 5.25 respectively), indicating high probability for social interaction. However, area C in Moore Hall and area A in Goodnow Hall have the lowest possible social behavior score suggesting that all the observed persons were engaged in non-social behavior (traffic behavior). Second,

area score differences within dorms are observed. Area B in Edwards Hall facilitated more verbal interaction (SBE=5.87) than area A (SBE=3.67) possibly because area B contained more socially conducive cluster arrangement. Area B in Goodnow Hall also facilitated more verbal interaction (SBE=4.37) than area A (SBE=2.0). This may be explained by the fact that area B also contained more socially conducive furniture arrangement. However, areas A and B in Haymaker Hall are not significantly different in their social behavior scores (3.2 and 2.67 respectively) possibly because both areas contained equally conducive furniture arrangement.

A trend displayed in Table 7 is for the lower social behavior scores to be less significantly different than higher social behavior scores. Thus, there are only three to four areas at the higher range of scores that are conducive to social interaction. According to our criteria, there are few dorm areas supportive of social interaction on the Kansas State University campus.

Table 8 shows the Pearson Correlation Coefficients for width to length ratio (WLR), furniture arrangement score (FAS), furniture density (FD) score and the social behavior (SBE) score and the sociopetality scores (SS) at the observational area level. On the whole, a substantial and significant correlation between the sociopetality score (SS) and the social behavior (SBE) score (r=0.63,

TABLE 7

Duncan Procedure with the SBE scores at the Observational Area level

Dormitory	N	Area	Mean	Groupings (*)
Edwards	8	B	5.875	a
Moore	8	B	5.25	a b
West	23	C	4.521	b c
Goodnow	25	B	4.376	c d
West	10	A	3.9	c d e
Edwards	16	A	3.625	e f
West	12	B	3.541	e f g
Haymaker	10	A	3.2	e f g
Moore	5	A	2.72	f g
Haymaker	3	B	2.67	f g
Goodnow	2	A	2.0	g
Moore	2	C	2.0	g

* Means with same letter are not significantly different

$p<.05$) was found. It is also clear that furniture density (FD) was the strongest correlated independent variable with SBE scores ($r=0.65$, $p<.05$). The width to length ratio and the furniture arrangement scores were not strongly correlated with the social behavior (SBE) score ($r=-0.21$, $r=.30$ respectively). These findings imply that the furniture density is the most important component of the sociopetality score and the strongest variable associated with social behavior in the waiting rooms in this study. Overall, these data support the assumption that the furniture density (FD) and furniture arrangement (FAS) components of the sociopetality score (SS) are positively related to social behavior (SBE) scores.

TABLE 8

Pearson Correlation Coefficient Matrix Between WLR, FAS, FD, SS, and SBE scores.

	SBE	WLR	FAS	FD	SS
SBE	----				
WLR	-0.21	----			
FAS	0.30	-0.41	----		
FD	0.65*	0.47	0.16	----	
SS	0.63*	0.24	0.59	0.88	----

* $p < .05$

Note: SBE = Social behavior score
WLR = Width to length ratio
FAS = Furniture arrangement score
FD = Furniture density
SS = Sociopetality score

Table 9 presents the distribution of social behavior categories across the dormitories. Verbal interaction was the most frequent social behavior observed (39.51%), followed by Traffic (26.33%) and Isolated active behavior (21.46%). The location of the waiting areas near the main entrance to the halls may be facilitating traffic behavior as well as inhibiting isolated passive behavior. It seems that these areas do not facilitate passive but a more active kind of behavior. Again, Haymaker has the lowest percentage in verbal interaction (<1%) among all the dorms.

Table 10 displays frequency distributions of social behavior by sex. Men accounted for the highest percentage

TABLE 9

Percent Distribution of Social Behavior Categories by Dormitory

	Analytical Categories of Behavior (*)				
Dormitory	TR	IP	IA	MA	VE
Edwards	2.9	--	4.3	--	13.2
Goodnow	7.8	--	4.9	1.9	15.2
Haymaker	3.4	--	2.5	--	.4
Moore	5.8	--	1.4	1.9	6.4
West	6.4	1.46	8.3	7.4	4.3
Total Percentage	26.33	1.46	21.46	11.22	39.51

(*) TR = Traffic behavior
IP = Isolated passive behavior
IA = Isolated active behavior
MA = Mixed active behavior
VE = Verbal interaction

(about 69%) of the behaviors recorded, even though gender occupancy for most of the dorms is coed. This finding suggests that the waiting rooms are used more by men than women. In addition, men are observed more frequently engaged in verbal behavior (86.5%) than are women (13.5%). Similarly, isolated active and traffic behavior were more frequently observed in men than in women. Women, on the other hand, are more engaged in mixed active behavior (65.3%) than are men (34.7%). Almost half of the observations for men were in the verbal behavior category, while observed behaviors for women seem to be evenly distributed (with the exception of isolated passive behavior).

TABLE 10

Frequency Distribution for Social Behavior by Sex

	Sex			
	Male		Female	
Behavior	n	%	n	%
Verbal	70	86.5	11	13.5
Mixed-Active	8	34.7	15	65.3
Isolated-Active	27	61.4	17	38.6
Isolated-Passive	--	----	3	100.0
Traffic	36	66.7	18	33.7
Total	141	68.78	64	31.22

A detailed analysis of each mapping sheet provided some additional information regarding gender differences. It was found that a high percent of the conversation (about 80 %) was between like-sex pairs. In addition, in the like-sex conversing pairs, a high percentage (about 85%) was between men.

Finally, during all observation periods, areas D and E in Moore Hall were not used, even though the sociopetality score (SS) was high for area E (SS = 5.81). A possible explanation may be that remodeling work consisting mainly of carpeting the area and replacing the furniture was taking place at the time of the final observations.

DISCUSSION AND CONCLUSIONS

The most important finding of this research is that a high score in the sociopetality score comprised of space proportions, furniture arrangement and furniture density is strongly related to a high score in social behavior ($r=.63$, $p<.05$). This finding supports the main assumption in this study that a sociopetal space is related to high levels of social behavior. In addition, among the variables comprising the sociopetality score (SS), the furniture density showed the strongest relationship to social behavior ($r=.65$, $p<.05$). The other two variables, furniture arrangement and size of the space may have dropped out because, conceptually, these variables may have nothing to do with the sociopetality scores previously discussed. In addition, as may be seen from Table 3, they have small variances ant therefore the Pearson Product Moment Correlation Coefficient would not reflect any true contribution. Furthermore, the width to length ratio (WLR) as originally conceived was based on corridor design. It may be that, conceptually, this ratio has little to do with waiting rooms. However, before it is eliminated from the sociopetality score, more research should be done in other settings.

Additionally, the more significant unit of assessment is at the observational area rather than at the dormitory level. It seems that when averaging together all areas within each dorm, no meaningful differences were found. Thus, there is evidence to suggest that sociopetal characteristics are less important in shaping social behavior in large scaled settings.

It should be emphasized that this research was essentially exploratory and correlational in nature rather than an experimental study. Based on the strength of the effect of one of the independent variables, furniture density, it may be important to replicate the study under more controlled conditions and where alternate settings can be examined. For example, holding constant furniture density but varying the furniture arrangement may provide additional information about the effects of furniture arrangement on social behavior. It is suggested that width-length ratio be investigated further as a component of the social behavior (SBE) score in future research.

Any generalization of these findings to other settings should be carefully considered. The differences in behaviors found in the waiting areas may be due to factors others than those studied here. The particular limitations of setting and sample selection, and the diversity in dorm type (coed or single-sex occupancy, highrise or low-rise structure, graduate or undergraduate students, low or high population) should not be overlooked.

As previously presented, social behavior in this study was operationally defined based on studies made by Ittelson et al. (1970). Although originally developed for use in psychiatric wards, the categories seemed to work well in this study.

Additionally, it seemed that furniture re-arrangement was most common in the observational area where light-weight chairs were provided, mostly in Goodnow Hall. Most of these re-arrangements resembled the cluster-type previously discussed. It was also observed that certain amenities located adjacent to the observational areas such as mail boxes, message boards, information desks and recreational objects such as piano, billiard table and 'foosball table' seemed to draw people together (see Figures 1 through 5). Finally, where windowed areas were provided, more observation behavior was recorded. Additional research is needed to study the possible impact of these and other environmental features on the social behavior of dorm residents.

Implications of the Study

A number of important implications of the study can be presented at this point. First, the fact that the concepts of sociofugal and sociopetal spaces were operationally defined in an objective manner. We may be able now to relate these concepts to other factors such as territori-

ality, personal space, and crowding. In addition, this study may suggest that the distances for comfortable conversation be carefully re-examined. The ecology of small groups in physical environments is now more comprehensible. Furthermore, now that we understand some factors that contribute to social behavior, we may understand some issues related to privacy in the environment.

Second, no technique, to the knowledge of this author, has attempted to empirically measure and define sociofugal and sociopetal attributes. Furthermore, the use of more naturalistic methods such as behavioral mapping, unobtrusive measurements and field notes may be useful in the study of these concepts. However, regarding the methodology for further research, a variety of techniques may be applied: semantic differential scales (Kasmar, 1970; Osgood, 1957) may be combined with participatory techniques (Wandersman, 1979). The main advantage in using these techniques is to discover in terms of user's conceptions, the strongest environmental attributes related to social behavior. Furthermore, these techniques may be complemented with unobtrusive measurements (Webb et al., 1966) and more naturalistic methods in data collection such as behavior-setting analysis, time-activity logs, and photographic recording of behaviors (Windley and Scheidt, 1980). Post-occupancy evaluation research (Marans and Spreckelmeyer, 1981; Zube, 1980) may be applied in most

cases to find those environmental attributes which more completely influence social behavior.

Third, for practitioners and interior designers, these findings can be useful during programming and design stages in designing new facilities or remodeling existing ones (Zeisel, 1970). Again, waiting rooms should be understood as multifunctional comprising a broad range of activities ranging from traffic behavior to verbal interaction. Designers must be aware of the effects of proposed environmental attributes such as furniture density for a given area. Similarly, if the findings presented in this study are taken into account, dorm managers will be able to make more accurate decisions and provide better management policies regarding waiting dorms. Their decisions regarding furniture density may either facilitate of inhibit the social behavior of potential users.

Finally, it is important to investigate how personal, physiological, psychological and cultural factors influence the socialization process. Although sociopetal spaces facilitate social interaction among socially inclined individuals, these arrangements alone cannot be expected to create social behavior among not socially inclined persons. On the other hand, sociofugal spaces inhibit in great extent social interaction even between persons socially inclined (Holahan, 1978). The distinction between the sociofugal space chosen voluntarily and space inhabit-

ed involuntarily (Sommer, 1967) would be helpful in clarifying these issues.

Once the factors previously discussed are empirically tested, more accurate and useful recommendations for architects, interior designers, dorm managers and policy makers may be formulated. At this point, every attempt should be made to keep records of initial hypotheses and design criteria at different stages in the design process for both new and remodeling design work. It is strongly suggested to focus future studies toward basic research that identify additional and meaningful sociopetal and sociofugal characteristics of spaces. This would contribute in great extent in building a more complete environmental design theory to enhance social interaction in the environment.

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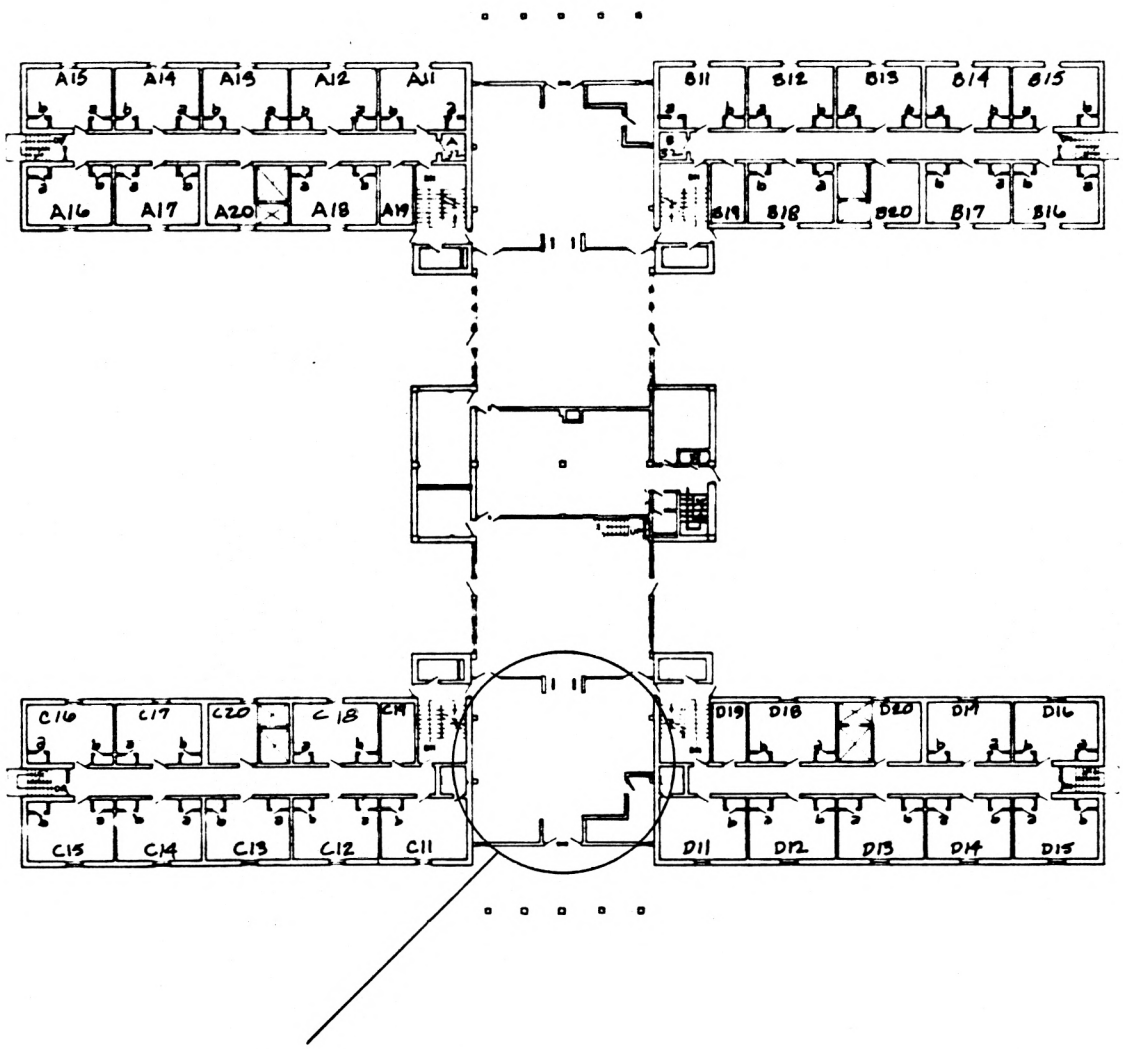
APPENDIX

This appendix includes the following information:

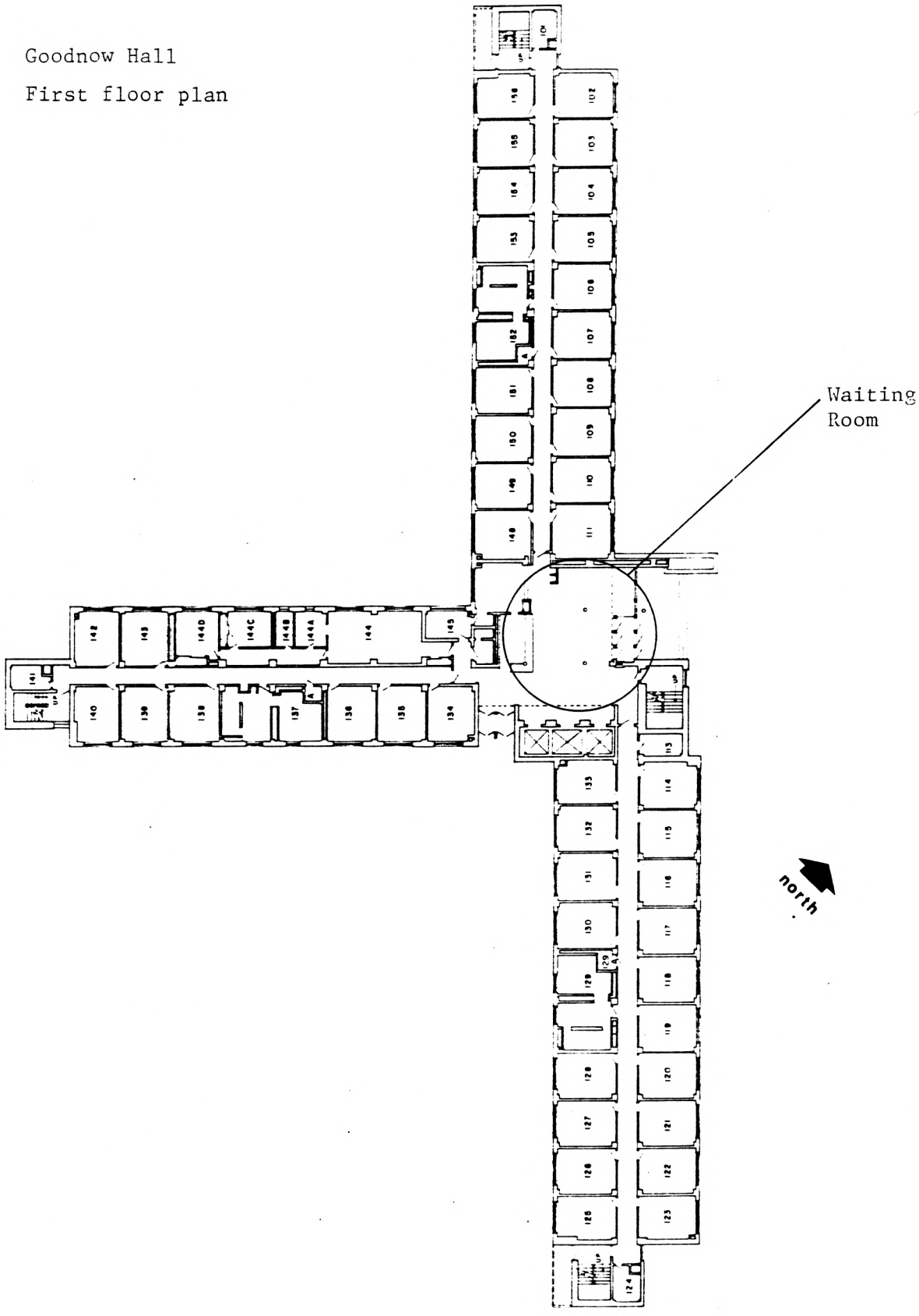
Edwards Hall

First floor plan



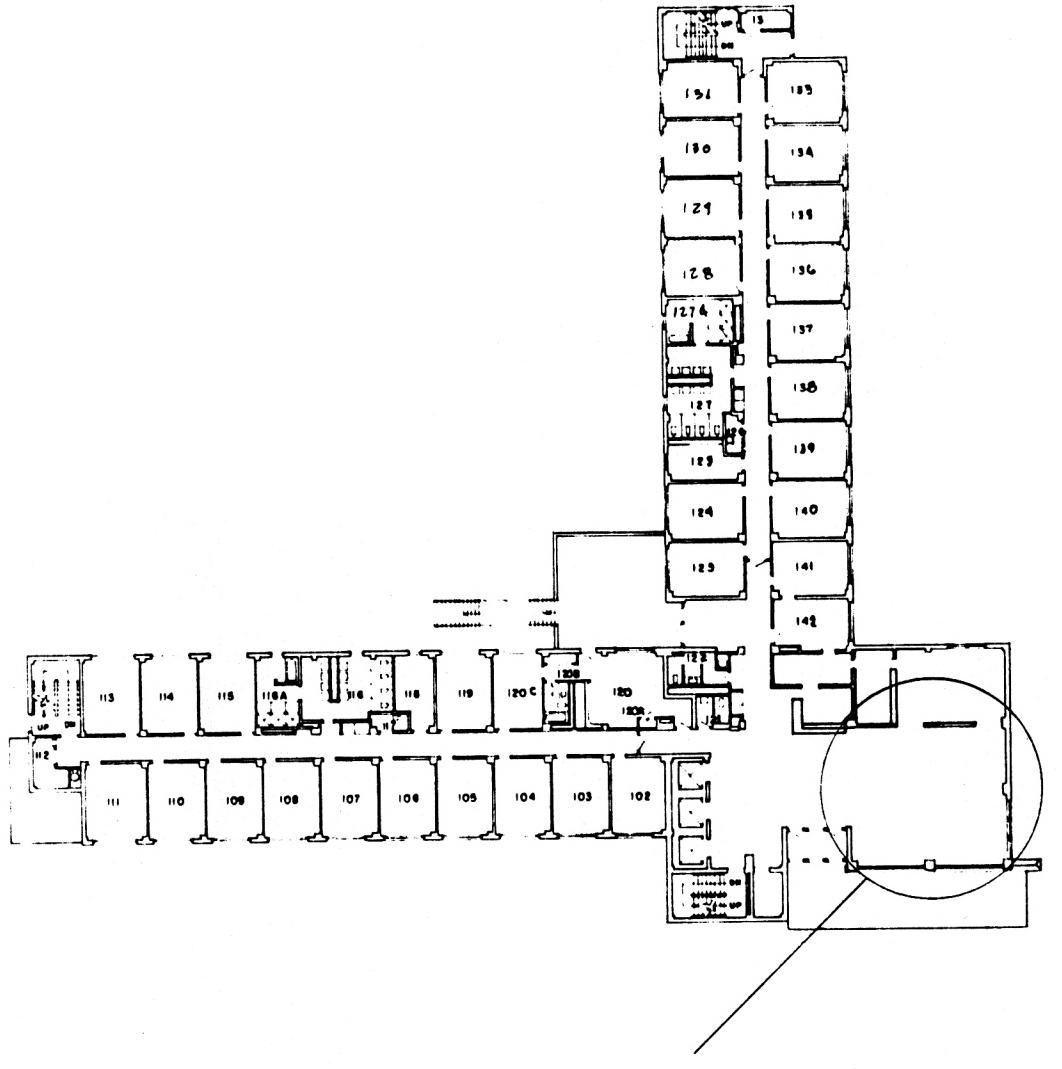
Goodnow Hall

First floor plan



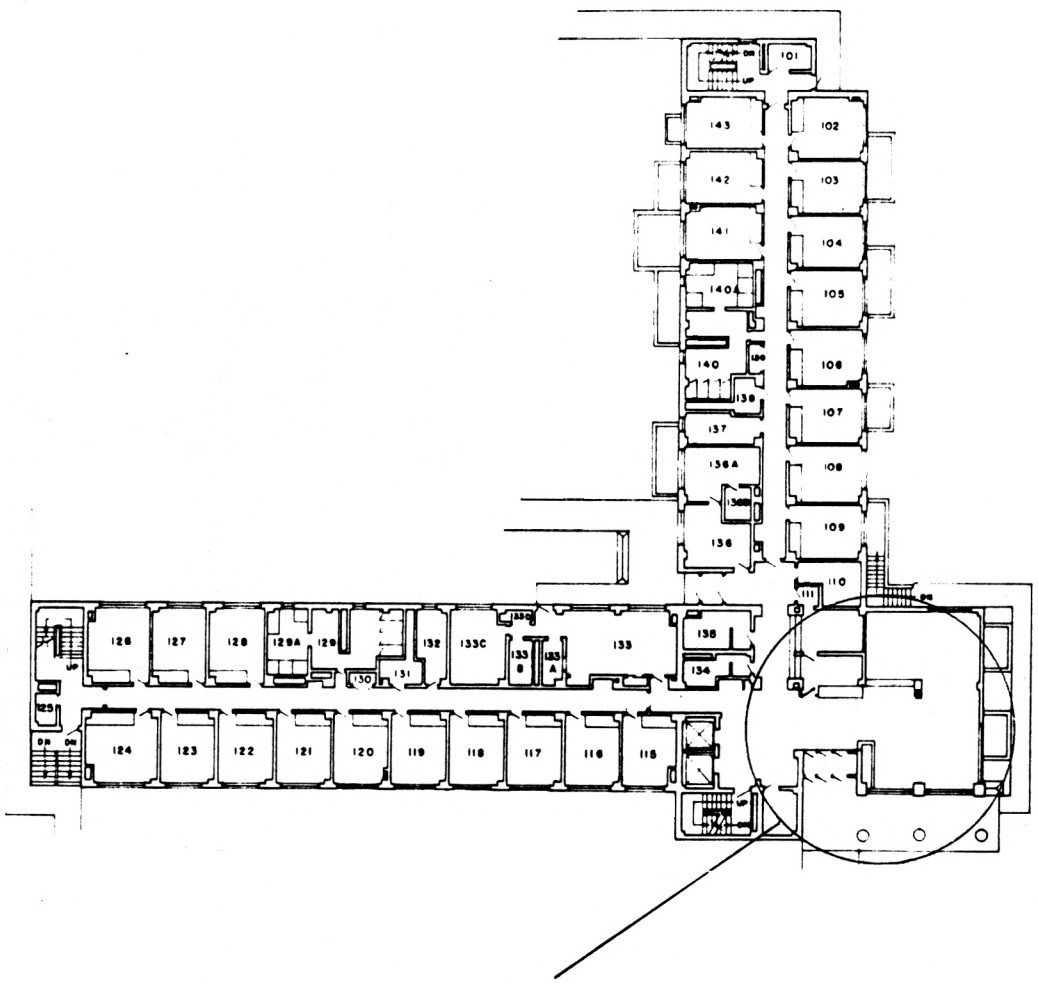
Haymaker Hall

First floor plan



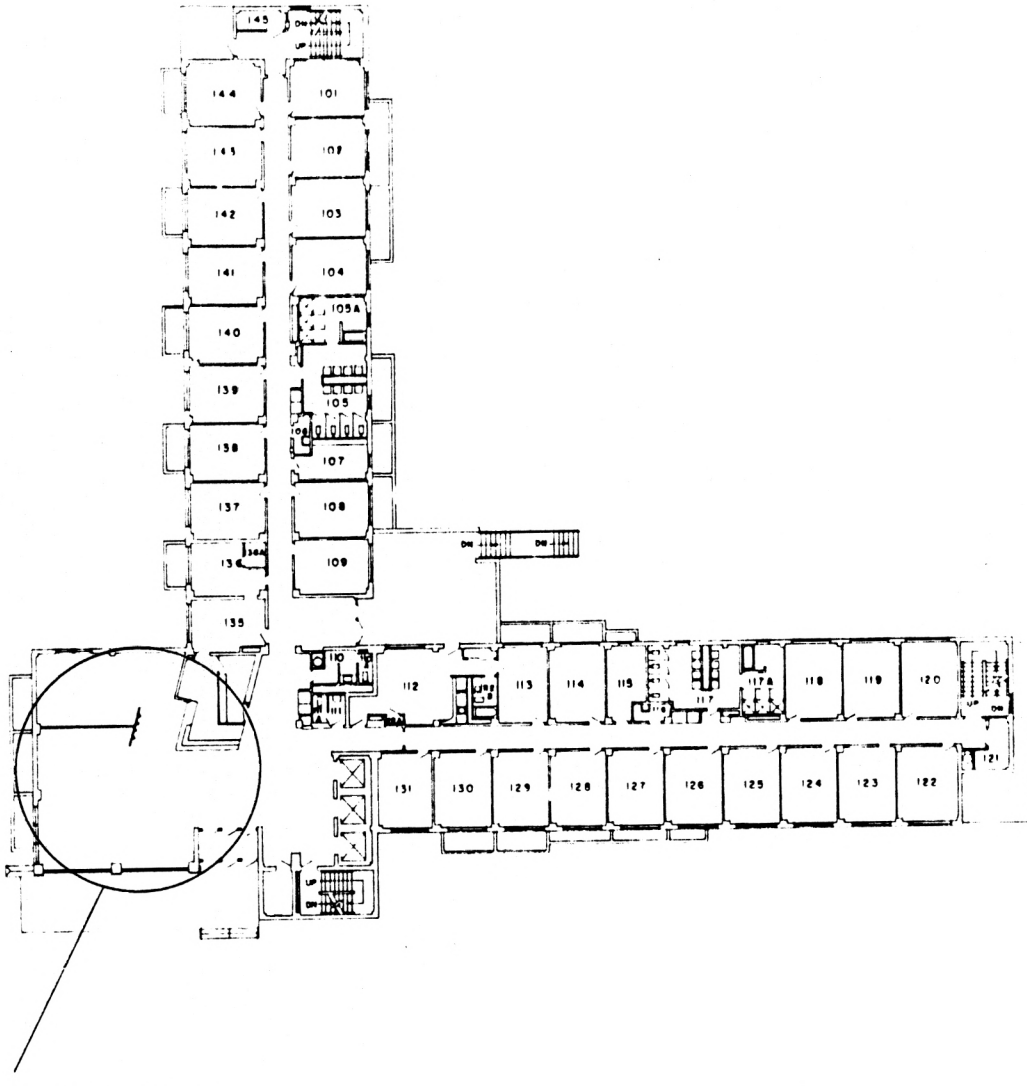
Moore Hall

First floor plan



West Hall

First floor plan



Waiting Room

Simbology:

Gender:

F = Female

M = Male

Behavior:

V = Verbal

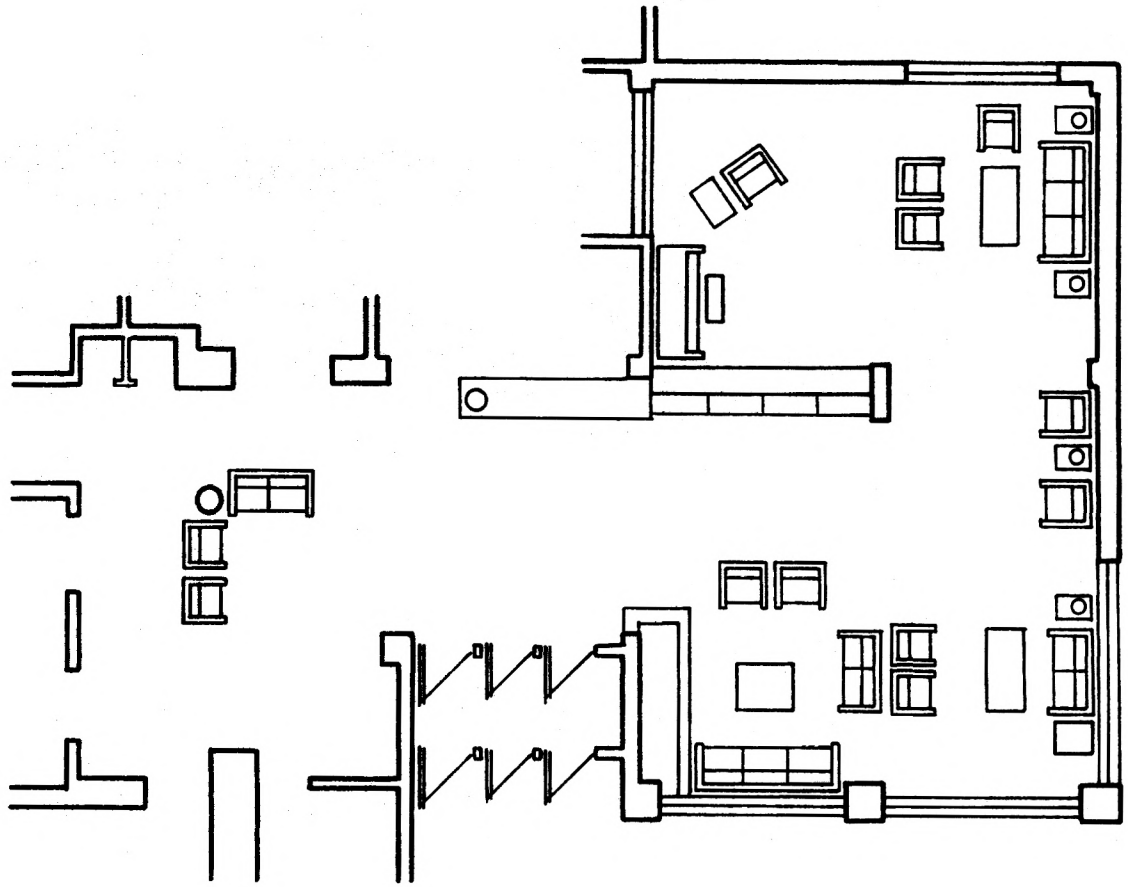
MA = Mixed active

IA = Isolated active

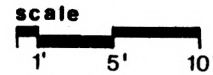
IP = Isolated passive

T = Traffic (——→)

O = Other



Waiting Room in West Hall



DATE _____

TIME _____

Representative Sample of a Mapping Sheet

THE IMPACT OF SOCIOFUGAL AND SOCIOPETAL ATTRIBUTES OF UNIVERSITY DORMITORY LOUNGES ON SOCIAL INTERACTION OF RESIDENTS

by

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AN ABSTRACT OF THE MASTER'S THESIS

submitted in partial fulfillment of the

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MASTER OF ARCHITECTURE

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Manhattan Kansas

1983

ABSTRACT

This thesis examines the relationship between sociofugal and sociopetal characteristics of spaces in public waiting rooms and social interaction among people.

Previous research has identified important relationships between these concepts. However, no research has operationally defined these characteristics and empirically studied their impact on social behavior of users.

In this study, three environmental attributes are defined and measured regarding degree of sociopetality: proportion of space, type of furniture arrangement, and furniture density. A sociopetality score was developed for five university dormitory waiting rooms based on a linear combination of these three attributes. Each dormitory waiting room was then divided into subareas for more detailed measurement.

Based on observational techniques, a data recording mapping sheet was designed to record the analytical categories of social behavior used in this study: social, mixed-active, isolated-active, isolated passive, traffic and other. A Social Behavior score was obtained based on these categories at the dormitory and observational area level.

An Analysis of Variance was performed to determine main effects for both dormitory and observational area on social interaction. The Duncan procedure was then applied to find out significant differences in the Social Behavior scores previously obtained at both levels. Finally, the Pearson Correlation procedure was applied between the Sociopetality and the Social Behavior scores at the observational area level.

No significant effect was found at the dormitory level. However, at the observational area level significant differences were discovered. Findings suggest that a high Sociopetality score is related to a high score in Social Behavior actually taking place in the waiting rooms. One of the independent variables, furniture density, possesed the strongest relationship to social interaction.

Conclusions and implications of the findings are discussed for theory and practice as well as for further research.