

EXPLORING THE MAINTENANCE OF SPATIAL ZONES BY MALE AND FEMALE STUDENTS IN FOUR UNIVERSITY ENVIRONMENTS

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The present study was undertaken to explore the natural maintenance of spatial zones among university students. It was a naturalistic field observation and exploratory in nature. A minimum of 400 observations were collected in 4 university environments (central library, bus point, bus, and canteen). The postural-sex identifiers, sociofugal-sociopetal orientation, and kinesthetic factor of Hall's (1963) notation for proxemic behavior were recorded. The Kolmogorov-Smirnov-Z test for 2 independent samples and the chi-square test were used to test differences between groups. It was found that the side-by-side orientation was most common in all environments. Personal space was the distance most often maintained in all environments, except in the bus; and there was more intimate space use in sociopetal environments than sociofugal environments. A statistically significant inverse relationship was found between orientation and distance, using Kendall's tau-b. Both genders mostly used personal space, but more female students used intimate space, and more male students used social and public space. It was also found that those students who are alone prefer to use public space.

Keywords: distances, personal space, university, environments

In any situation or setting, the distances between people are seldom random. Human beings have a common understanding of those distances that are appropriate and those that are not for most of the situations that they normally find themselves in. Distance determines how people will interact and communicate information about the type of relationship between individuals and about the type of activities that can be

engaged in (Bell, Greene, Fisher, & Baum, 2001). Thus an individual always keeps other people at a certain distance from him or herself; this distance can vary depending on the nature of the relationship, level of intimacy, gender, and physical environment.

The study of the use of distance and space is termed proxemics. A proxemic classification system for describing distance zones according to social relationships that were common to American middle class adults, was developed by Hall in 1976. He conceived of these distances as concentric bubbles which surround an individual. Hall (1976) claimed that the specific distance chosen between two individuals depends on the transaction, the

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relationship of interacting individuals, how they feel and what they are doing. Specifically, Hall (1976) identified four types of distances: Intimate, personal, social, and public, each with a close and a far phase.

Intimate Space/Distance: reserved for deep personal relationships. The close phase (up to 6 inches) includes intimate activities which require extensive contact of the bodies. The far phase (from 6 to 18 inches) does not allow for much, if any, body contact (Hall, as cited in Arias, 1996). Communication at this distance can remain private from all other people in the same space. In some settings people find themselves compulsorily at this distance, for example, students sitting in a lecture hall, or the audience at the cinema or theater, lift or elevator, and crowded subway (Lawson, 2001).

Personal Space/Distance: used for having personal conversations with friends or family (ranging from 1.5 to 4 feet). The close phase permits one person to touch another, while the far phase does not permit this (Arias, 1996). It allows a range of contact between people from relatively intimate to more formal.

Social Space/Distance: reserved for formal interactions such as business meetings, classrooms, or interviews. It is the casual interaction distance between acquaintances and strangers. Its close phase (4 to 7 feet) is the characteristic of informal interaction. People who work together or are at a social event (but are not well acquainted) tend to use this distance, while more formal interaction requires the far phase (7 to 12 feet) (Levy-Leboyer, 1982).

Public Space/Distance: shows only a one-way involvement. Its close phase (up to 15 feet) provides the amount of space generally desired among strangers. It can be used by anyone on public occasions (teachers, actors, etc.), its far phase (15 to 25 feet or more) is necessary for large audiences. It forces people to adopt a more formal and better articulated tone of voice (Levy-Leboyer, 1982).

Hall (1976) divided the people of the world into contact and non-contact groups. Contact cultures are considered to be highly involved in their interactions and thus use small interaction distances. Non-contact cultures, on the other hand, avoid close interpersonal distances, and touching. Pakistan has been categorized as a non-contact culture by Watson (1970). Hall (1976) suggested that cultures train their members to accept spatial conditions that are congruent with social structure and societal values. This occurs early in life and becomes a fixed attribute of the individual (Baldassare, 1978).

According to Bell et al. (2001) individual differences in spatial behavior probably reflect different learning experiences concerning the amount of space necessary to fulfill the protective and communicative functions of spatial distance. Proxemic behavior is simultaneously dependent on culture, attributes of the individual, the social situation, as well as on the spatial and designed qualities of the setting (Zimring, Evans, & Zube, 1978). People who are well acquainted and like each other, tend to interact more closely (Taylor, Paplau, & Sears, 2003).

The maintenance of spatial zones

is effected by several factors such as power or status, relationship and attraction, mental illness, gender, age, environment, specific culture, and so on. The present study is focused on the effects of environment, and gender on maintenance of spatial zones in a Pakistani university culture.

The context of an environment is a major factor in determining the spatial requirements of an individual. Environments differ in their structure and use, and these differences can change the distance that an individual keeps between him or herself and others. Osmond (as cited in Hall, 1968) stated that when space is organized so that it is conducive to communication between people it is referred to as sociopetal, and when space is organized to produce solitary behavior it is referred to as sociofugal. It is thought that closer proximity is better tolerated in sociopetal rather than sociofugal environments. Sociofugal settings typically have long rows of immovable chairs all facing one direction, which makes proximate conversations uncomfortable, and all interactions with those in front or behind the person all but impossible. Sociopetal settings might have chairs facing each other, in a circular, or a semi-circular arrangement (Sommer, 1969).

Discussing gender differences in distance setting, most researches suggest that women have smaller distance zones than men (Mehrabian & Diamond, 1971; Heshka & Nelson, as cited in Bell et al., 2001; Lett, Clark & Altman as cited in Rungapadiachy, 2004). It seems that generally male-male pairs keep the largest distances followed by female-female pairs and

male-female pairs (Henley, 1977). Similar results have been found on Egyptian samples (Sanders, Hakky, & Brizzolara, 1985) and Turkish samples (Rustemli, 1968; Kaya & Erkip, 1999).

The social learning theory is most commonly used to explain these gender differences. It asserts that distance setting is a gradually learned behavior resulting from an individual's history of reinforcement. This begins to happen at a very early age so that by the age of three, children already stay farther from boys than girls (Gifford as cited in Academon, 2008). Closer distances between females is thought to reflect a stronger female socialization to be affiliative, and more experience of females with intimate nonverbal modalities (Crawford & Unger as cited in Bell et al., 2001; Deaux & LaFrance, 1998; Depaulo & Friedman, 1998). Women may be more socialized to be more dependent, to be less afraid of intimacy with others of the same gender, and generally to be more comfortable in affiliative situations.

It is generally accepted that proxemic patterns differ across cultures. In order to apply the principles of proxemics in Pakistan, it becomes necessary to discover what these patterns are in Pakistani culture. In the process of literature review, scientific articles on a Pakistani population were not found, indicating either a lack of research in this area, or failure to report such research. Meanwhile, several sources claim about the spatial maintenance patterns of the general Pakistani population with no empirical evidence (e.g., Kwintessential, 2009; Metrisko, 2009) to support such claims. These

reasons make such a study in Pakistan important and necessary.

Natural observations and experiments are considered by some researchers (Haase & Markey, 1973; Hayduk, 1983) to be better methods of studying proxemic behavior, as compared to simulation, projective and paper-pencil methods. Thus, the design used was naturalistic unobtrusive field observation. Because the present study is a preliminary research in Pakistan, so only exploratory objectives were formulated. The major objective was to observe the natural distance preferences of individuals in four different environments; and to explore the differences in these preferences as a function of gender, environment, and type of companionship. Following are the specific objectives:

1. To explore how the sociofugal-sociopetal axis (SFP axis), distance, types of companionship, and eye contact maintained by participants will differ across environments.
2. To explore whether there is an association between SFP axis and distance maintained between participants.
3. To explore how eye contact maintained by participants will differ with the distance maintained between participants.
4. To explore how the distances, and SFP axis maintained by participants will differ across gender of participants.
5. To explore how the distances maintained by participants will differ across postures and types of companionships.

Method

Sample

The four environments used for collecting observations were all located within the Quaid-e-Azam University (QAU), Islamabad. These environments were:

The central library (sociofugal), the bus (sociofugal), an outdoor canteen (sociopetal), and the bus point (sociopetal); which is basically the main 'bus parking' of the University. The reasons that make QAU a good choice for the present study are that: there is relative ease of access to all areas, note-taking behavior (required while making observations) is less subject to reactivity, most studies on spatial zones are done on university samples, thus some degree of comparison may be possible. QAU also uses a quota system for admission, and thus the students represent several areas of Pakistan, and so the sample may be more representative.

Observations were scheduled randomly at different times of the day (8 am to 3 pm) and on different days (Monday to Saturday). The fish bowl technique was used to select, firstly, the day of observation and secondly, the time of observation. A minimum of four hundred observations were made at each setting. The participants were all students of the University.

Instrument

Hall (1963) developed a system for notation of proxemic behavior, which was designed to systematize

observation in a simple way and also to provide a record so that similar events can be compared across time and space. According to Hall (1976), proxemic behavior is a function of eight different dimensions (postural-sex identifier, sociofugal-sociopetal axis, kinesthetic factors, touch code, retinal combinations, thermal code, olfaction code, and voice loudness scale). Only the following three were relevant to the present study. Postural-sex identifier which identifies gender and whether a person is sitting or standing. SFP axis identifies the body orientation of a person with respect to another person, using an eight-point compass face. Positions range from zero (face to face) to eight (back to back). In the kinesthetic factors dimension the distance between people is judged as distances in feet depending on the potential for holding, caressing or being struck (Hall, 1963). The distances were empirically derived by Hall from a small sample of medium-sized persons. In the present study, the kinesthetic portion illustrated with sketches was used to approximate distances.

Observations for companionship, and eye contact were also recorded. Five types of companionships were recorded: alone, same sex dyad, mixed sex dyad, same sex group, and mixed sex group. When a participant is not involved in any verbal interaction, he or she is referred to as alone. A participant involved in any verbal interaction with another participant of the same gender is referred to as being in a same sex dyad. A participant involved in verbal interaction with another participant of the opposite

gender is referred to as being in a mixed sex dyad. A participant involved in any verbal interaction with more than one participant of the same gender is referred to as being in a same sex group. A participant involved in any verbal interaction with more than one participant of the opposite gender (so that a group of both males and females results) is referred to as being in a mixed sex group. The presence of eye contact refers to mutual eye gaze between two participants maintained for a minimum of five seconds.

Procedure

The observations were recorded by the researcher. Prior to data collection, almost two weeks were spent studying the four locations on the university campus and making practice observations; so that the actual data collection could be carried out with relative ease. For the data collection, the observer positioned herself in each setting at a location where the maximum numbers of university students were visible. The observer started with the first visible student and noted the behavior of the student; and recorded posture, gender, companionship, SFP axis, approximate distance, and eye contact maintained. Then proceeded with the next visible student, moving in sequence from left to right.

Results

The sociofugal-sociopetal axis and distance were recorded as ordinal variables. The nature of the data

collected for these variables met the following assumptions of nonparametric tests: Samples were independent, random and at least ordinal data was recorded. However, it was discovered that the shapes of the distributions of the groups to be tested were not similar, which violated the assumptions of the Mann-Whitney U Test, and the Kruskal-Wallis H Test. These two tests only apply when populations have the same distribution shapes (Weiss, 1997). Thus the Kolmogorov-Smirnov-Z test was used because it is sensitive to differences in distribution shapes. The Kolmogorov-Smirnov-Z test can be used for continuous or discrete data; and large or small samples (Feinstein & Thomas, 2002). The present data also meet the assumptions of the Kolmogorov-Smirnov-Z test, which are: Samples should be independent and random; data should be at least ordinal (Sheskin, 2004; Feinstein & Thomas, 2002).

The Kolmogorov-Smirnov Z test for two independent samples was used to test differences of SFP axis and distances across types of environments, eye contact, and gender. It was also used to test differences in distances across postures and companionships. The chi-square test

was used to test differences in types of environments for eye contact and types of companionship. Kendall's tau-b was used to test whether a relationship exists between SFP axis and distances. Data from the bus environment was included in the tests investigating differences across environments (of SFP axis, distances, eye contact, and companionships) only. Because this environment was so different from the others, as proximity was forced rather than chosen and inclusion failed to provide a clear picture of the findings. The Statistical Package for Social Sciences (SPSS) version 13.0 was used for analysis.

Kolmogorov-Smirnov-Z test was used to compare distributional differences in the SFP axis across four different environments, bus point ($n = 404$), canteen ($n = 465$), library ($n = 530$), and bus ($n = 434$). The tests revealed a significant difference between the following groups: bus point and library, $Z = 2.614$, $p < .01$, bus point and bus, $Z = 5.018$, $p < .01$, canteen and library, $Z = 1.983$, $p < .01$, canteen and bus, $Z = 5.28$, $p < .01$, library and bus, $Z = 7.39$, $p < .01$. Non-significant differences were found between bus point and canteen ($Z = .751$, $p = ns.$)

Table 1

Percentage Frequencies of Spatial Distances Maintained by University Students from Each Other in Four Types of Environments

Distances	Library	Bus point	Canteen	Bus
Intimate	0.6	21.0	20.6	98.8
Personal	58.9	68.1	69.2	-
Social	11.7	2.0	3.4	1.2
Public	28.9	8.9	6.7	-

Table 2

Association between Sociofugal-Sociopetal Axis and Distance Maintained by University Students from each other

Variables	Kendall's tau-b τ
SFP axis	
Distance	-.20*

* $p < .01$.

Table 1 clearly shows that the university students used personal space the most often in all environments except the bus (58.9%, 68.1%, 69.2%). In the library, the intimate space was used least often (.6%), but this space was used most often in the bus (98.8%). At the bus point and canteen the social space was used the least (2%, 3.4%).

Kolmogorov-Smirnov-Z test was used to compare distributional differences in distances maintained by university students from each other across the four environments. The tests revealed a significant difference between the following groups: bus point and library, $Z = 4.49$, $p < .01$, bus point and bus, $Z = 11.22$, $p < .01$, canteen and library, $Z = 4.79$, $p < .01$, canteen and bus, $Z = 11.71$, $p < .01$, library and bus, $Z = 15.18$, $p < .01$. But non-significant differences were found between bus point and canteen ($Z = .33$, $p = ns$).

Chi-square tests of independence were performed to examine the relation between five companionship types and four environment types. The relation between alone and four environments was significant, $\chi^2 (3, N = 621) = 396.91$, $p < .01$. The relation between same sex dyad and four environments was significant, $\chi^2 (3, N$

$= 493) = 21.37$, $p < .01$. The relation between mixed sex dyad and four environments was significant, $\chi^2 (3, N = 515) = 23.67$, $p < .01$. The relation between same sex group and four environments was significant, $\chi^2 (3, N = 79) = 30.01$, $p < .01$. The relation between mixed sex group and four environments was significant, $\chi^2 (3, N = 125) = 36.01$, $p < .01$. Chi-square tests of independence were also performed to examine the relation between eye contact types and four environment types. The relation between no eye contact and four environments was significant, $\chi^2 (3, N = 1044) = 145.57$, $p < .01$. The relation between eye contact maintained and four environments was also significant, $\chi^2 (3, N = 789) = 243.02$, $p < .01$.

The association between SFP axis and distances maintained by university students from each other was also assessed employing Kendall's tau-b. The two variables were found to be negatively correlated, $\tau = -.20$, $p < .01$ (Table 2). Kolmogorov-Smirnov-Z test was used to compare distributional differences in distances maintained by university students from each other across groups: eye contact ($n = 778$) and no eye contact ($n = 621$).

Table 3

Percentage Frequencies of Spatial Distances Maintained by Male and Female University Students from Each Other in all Environments

Participants	Intimate	Personal	Social	Public
Male	10.6	63.3	7.9	18.2
Female	15.9	66.7	4.3	13.1

Table 4

Percentage Frequencies of Spatial Distances Maintained by University Students from Each Other in Five Types of Companionship Groups

Distances	Alone	Same sex Dyad	Mixed Sex Dyad	Same sex Group	Mixed sex Group
Intimate	0.4	8.7	22.1	18.2	16.0
Personal	15.7	85.3	73.0	71.4	72.8
Social	7.1	6.0	4.5	6.5	11.2
Public	76.8	-	0.4	3.9	-

The test revealed a significant difference between the groups, $Z = 6.31, p < .01$.

Table 3 clearly shows that personal space was used most often by both male (63.3%), and female (66.7%) university students; while social space was used least often (7.9%, 4.3%). More male students (18.2%) used public space as compared to female students (13.1%); whereas more female students (15.9%) used intimate space as compared to male students (10.6%).

Kolmogorov-Smirnov-Z test was used to compare distributional differences in distances maintained by university students from each other by male ($n = 720$) and female ($n = 679$) students. The tests revealed a significant difference between the male and female groups, $Z = 1.63, p < .01$. Kolmogorov-Smirnov-Z test was used to compare distributional differences

in SFP axis maintained in male and female students, which revealed a non-significant difference between the male and female groups, $Z = .70$. Kolmogorov-Smirnov-Z test was used to compare distributional differences in distances maintained by university students from each other across postures, standing ($n = 316$) and sitting ($n = 1083$). The tests revealed a significant difference between the standing and sitting groups, $Z = 2.56, p < .01$.

Table 4 clearly shows that those students who were alone used the public space most often (76.8%). All other groups used the personal space most often (85.3%, 73%, 71.4%, 72.8%). Social space was used least by same sex dyads (6%) and mixed sex groups (11.2%) while mixed sex dyads (.4%) and same sex groups used the public space the least (3.9%).

When Kolmogorov-Smirnov-Z test was used to compare distributional differences in distances maintained by university students from each other across five types of companionship groups; alone ($n = 280$), same sex dyad ($n = 402$), mixed sex dyad ($n = 515$), same sex group ($n = 77$), and mixed sex group ($n = 125$), it revealed a significant difference between the following groups: alone and same sex dyad ($Z = 10.01, p < .01$), alone and mixed sex dyad ($Z = 10.65, p < .01$), alone and same sex group ($Z = 5.17, p < .01$), alone and mixed sex group ($Z = 7.13, p < .01$), same sex dyad and mixed sex dyad ($Z = 2.01, p < .01$). The tests also revealed a non-significant difference between the following groups: same sex dyad and same sex group ($Z = .762$), same sex dyad and mixed sex group ($Z = .712$), mixed sex dyad and same sex group ($Z = .453$), mixed sex dyad and mixed sex group ($Z = .636$), same sex group and mixed sex group ($Z = .296$).

Discussion

The first objective of the study was to explore how the SFP axis maintained by participants differed across environments. A significant difference was found between the bus and other environments; a significant difference was also found between the library, and the canteen and the bus point. The side-by-side orientation was found to be the most popular in all environments, bus point, canteen, and library. The more sociofugal orientations were uncommon in all environments. Participants appeared

to maintain those orientations that allowed more interaction. A reason for this might be that Pakistan is a collectivist culture, where being connected with others is preferred over solitude, thus even when seeking to be apart from others (e.g., in the library) perhaps Pakistanis still prefer to keep channels of access open, and so prefer sociopetal rather than sociofugal orientations. More variety of orientations was observed in the library than in any other environment.

It was found that there is a statistically significant, but low negative relationship between SFP axis and distance. It has been found in previous studies that there can be an inverse relationship such as Andersen et al., (as cited in Hargie & Dickson, 2004), Watson & Graves (1966); Clore (as cited in Patterson, 1973); and Pellegrini and Empey (as cited in Patterson, 1973). This would be expected in insituations where orientation was being used to compensate for the uncomfortable feelings that may arise from very close distances. So the closer two individuals are, the less likely they are to look directly at each other.

It has been suggested that men prefer to position themselves across from like others, while women prefer to position themselves adjacent to like others (Byrne, Baskett, & Hodges, 1971). But a significant difference was not found in the present study; almost an equal number of male participants maintained the side-by-side orientation as compared to female participants. Researches which suggest that males prefer to position themselves across from like others, have been conducted in individualistic

cultures; it is possible that because Pakistan is a collectivistic culture, adjacent seating is preferred by men as this is considered a more cooperative orientation as compared to across seating, which is considered more competitive.

While exploring how the distances between participants differed across environment, it was found that in the bus, intimate space was used by ninety-nine percent of the participants (due to fixed seating arrangement). Otherwise the personal space zone was found to be the most preferred in the other three environments. At the bus point and canteen, sixty-nine percent, and at the library, fifty-nine percent of the participants used this distance. Also many more chose the close phase of the personal space zone as compared to the far phase. It seems that most university students in Pakistan, keep a personal distance from other students in normal interactions. This is similar to earlier studies which have categorized Pakistan as a non-contact culture.

There was also more use of the social and public space zones in the library as compared to the bus point and canteen (see Table 1). As Sommer (1967) pointed out that in a library occupants distribute themselves to increase social and psychological distance and try to remain apart. There was more use of the intimate space zone at the bus point and the canteen as compared to the library. Thus Osmond's (as cited in Hall, 1976) concept that there are some environments that tend to keep people apart (such as library and bus) and other environments that tend to bring people together (such as bus point and

canteen) seems to be true for Pakistani culture as well. Because some environments are more social (sociopetal) than others, it was expected that there would be more interacting participants in these environments. The highest number of non-interacting participants (alone) was found on the bus. The second highest number of lone participants was found in the library, which like the bus is a sociofugal environment. The differences in frequencies of the types of companionships in all four environments were found to be significant. There were more same sex dyads, mixed dyads and mixed groups at the canteen compared to other environments as this is more social in nature and allows more intimacy.

The least amount of eye contact was maintained in the bus where the highest amount of intimate space zone usage was recorded. Costanza and Ruggieri (2008) point out that in crowded places such as mass transit, waiting in lines, elevators and so on people will face a different direction than the people around them. In the present study, it was found that even interacting participants did not maintain eye contact in the bus. This indicates that the occupation of another person in the intimate space seems to make a person uncomfortable enough to not want to 'look' at others.

Baldassare (1978) suggests that the general notion is that, when confronted with high densities, individuals learn to conserve energies by attending to more rewarding encounters and avoiding neutral or potentially harmful interactions. Hidetoshi (1992) also mentioned that

passengers, without exception, engage in their 'private' behavior, for example, reading, dozing or gazing outside of the window. In the bus it was found that a total of seventy-two percent of the passengers in the university bus were engaged in private behavior (looking out windows, looking down, etc.), which increased their psychological distance from other passengers. These findings indicate that even in Pakistan, the close proximity that is faced by students in buses might be making them uncomfortable.

The highest record of eye contact maintained by participants while interacting occurred at the canteen, followed by the bus point and finally the library. The observation that more than half of the students in the library did maintain eye contact during verbal interactions can be explained by the relatively large number of 'study-dates', and 'study-groups' that are found here.

For both men and women, the personal space zone was used the most. However, more women used the intimate space as compared to men. This suggests that women use closer distances than men. It was also found that more women used the close phase of the personal space zone whereas more men used the far phase of the personal space zone more often than women. This lends support to the idea that men keep more distance as compared to women.

Research suggests that standing seems to relate to far-intimate and close-personal zones, while sitting seemed to be observed in the far-personal and close social zones (Zimring et al., 1978). It was observed

that the personal space zone (close phase) was used most often by students who were standing whereas seated students were found to be using the personal space and public space zones more often, the intimate space and social space zones were also observed to have been used comparatively more by seated students than standing students. These results are similar to previous research findings, except for the observation of intimate space being used more while sitting rather than standing.

The higher percentage of students who were alone seemed to have preferred the public space as compared to the other spatial zones. It was observed that personal space was used most often by interacting individuals irrespective of type of dyad or group. The personal space zone permits a range of contact between people from relatively intimate to more formal. It is 'normal' contact distance that enables people to remain in reasonable proximity or to move toward more or less personal communication (Altman & Vinsel, 1977). There was more use of the close phase of personal space as compared to the far phase, in all interacting students who used the personal space zone.

Mixed dyads seem to be using the intimate space the most. This is a distance of trust and is entered normally only with permission. All other groups seemed to be using the personal space more. The highest percent of participants who seemed to be using the social space were in mixed groups. In Pakistani culture it is considered better manners to keep some distance from members of the

opposite gender, especially around other people. Thus, it is possible that individuals in mixed-sex dyads feel more inclined to keep distance from opposite sex members, because of the presence of others in the group. Social space was used most often in a mixed group by both men and women. So it seems that both men and women feel that they should keep a 'respectable' distance, since closer distances are usually interpreted as indicating intimacy.

Both men and women who were alone preferred the public space zone. Higher number of women preferred the personal space for interaction in all types of dyads and groups. The intimate space was used by more women when in a same-sex group. More men preferred the personal space for interaction in all types of dyads and groups. Interestingly, the intimate space was used by more men when in a mixed dyad as compared to other interacting groups, which indicates that more men prefer to share their intimate space with women than with other men, whereas more women prefer to share their intimate space with other women. One reason for this might be that men perceive less threat from women than they do from men; another reason might be that these men choose closer distances to women to indicate a higher degree of intimacy.

Conclusions

The present study was carried out to investigate the natural distancing preferences of university students using unobtrusive field observation, in four university environments; and to

explore the differences in these preferences as a function of gender, environment, posture, and companionship. It can be concluded that university students interacted more and kept less distance from others in sociopetal environments as compared to sociofugal environments. The results also indicated that the personal space zone was used most often by all interacting students; thus, it can be concluded that Pakistani university students require as much personal space as most university students from western cultures such as the United States of America. Women used the intimate space more as compared to men, who used more social and public space; this indicates that women tend to keep less distance from others as compared to men. However, more research expanding on the present study is needed to draw more firm conclusions.

Limitations and Suggestions

The present study explored the natural distance preferences among interacting dyads and groups. It has been pointed out that there is an inverse relationship between distance and degree of acquaintanceship; not only along the continuum of acquaintance (from know-very-well to complete strangers), but also along the continuum of friendship (from like very much to dislike). Degree of acquaintanceship was not controlled in the present study. It is suggested that in further studies this variable should be controlled and focused on. The sample of the present study was that of university students and they were observed in university environ-

ments. Distancing preferences and personal space requirements of other populations (and in different contexts), such as individuals living in rural areas, of different professions, mentally ill individuals, and criminals should be studied to examine how these differ. Further studies may also want to look into the effects of terrorist attacks on spatial zones of affected populations.

Observations in the bus, were made when these buses were full, and no empty seats were available; it has, however, been observed that on a route that is not so busy, and when more seats are available, passengers prefer to sit apart from each other. Observations should be made in half-full buses as well to investigate whether students try to use this opportunity to increase the physical distance between themselves and other students. Only three of Hall's (1963) dimensions of proxemics were recorded in the present study, but it is said that individual's judge distance based on all eight dimensions, thus the other five dimensions should also be studied in future investigations into proxemics, and Hall's notation system should be put under empirical rigor to test and develop it further.

The implications or applications of research in this area lie in communication, improving mental health care, work environments and so on. The findings of the present study indicate that individuals use different spatial zones for different purposes. This differs across cultures and misunderstandings can arise when a person from one culture is approached at an inappropriate distance by a

person from another culture. Knowing how to space oneself can also be advantageous in business relationships. In psychiatric institutions, it can be very helpful to know what is an appropriate or healthy distance to maintain from a sufferer; this may greatly help in treatment. Similarly, knowledge of where non-threatening and comfortable spatial zones lie can be used in designing work environments.

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